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China Report

ECONOMIC AFFAIRS

No. 147

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ECONOMIC PLANNING

NONLINEAR REAL OBJECT INPUT, OUTPUT MODEL DESCRIBED

Xiamen ZONGGUO JINGJIWENTI [CHINA'S ECONOMIC ISSUES] in Chinese No 1, Jan 81 pp 47-52

[Article by Chen Xikang [7115 6932 1660] and Xue Xinwei [5641 2450 0251]: "A Type of Nonlinear Real Object Input and Output Model and Its Application in Economic Work"]

[Text] The input and output table can be a real object input and output table or a value input and output table according to the different units used. This article discusses the problem of methodology resulting from the use of a real object input and output table in planning, and proposes a type of nonlinear real object input and output model.

The main structure of the real object input and output is shown in Table 1.

Table 1 read horizontally gives the following equation:

$$\sum_{j=1}^{n} Xij + Wi + Yi = X \qquad (i = 1, 2, \cdots, n) \tag{1}$$

The above equation shows the yield of the i type products equals the sum of the part used as the intermediate product and the part used as the final product.

We introduce the consumption coefficient

$$Aij = \frac{Xij}{Xj} \qquad (i, j = 1, 2, \cdots \cdots, n \tag{2}$$

Here, Aij represents the consumption of i type products to produce a unit of j type products, thus, equation (1) can be rewritten as

$$\sum_{j=1}^{n} AijXj + Wi + Yi = Xi \qquad (i = 1, 2, \cdots \cdots, n) \tag{3}$$

and it can be represented in matrix from $AX + W + Y = X$ (4)

Table 1

		Intermediate Products							Final Products							Total Production
		Product 1	Product 2	...	Product n	Subtotal	Other productive uses	Total	Living cost	Increases in inventory	Newly added national reserves	Newly added fixed assets	Imports	Exports	Total	
Product types	1	X_{11}	X_{12}		X_{1_n}	$\sum_{j-1}^{n} X\ 1j$	W_1								Y_1	X_1
	2	X_{21}	X_{22}		X_{2_n}	$\sum_{j-1}^{n} X\ 2j$	W_2								Y_2	X_2
	⋮															
	n	Xn_1	Xn_2		Xnn	$\sum_{j-1}^{n} Xnj$	Wn								Yn	Xn
Labor force		T_1	T_2		Tn	$\sum_{j-1}^{n} T\ j$	U									
Fixed funds		K_1	K_2		Kn	$\sum_{j-1}^{n} K\ j$	V									

Here, n represents the product types entered into the input and output table.
Xij represents the amount of i type products consumed in the process of producing j type products.
Wi represents other productive uses of i type products. It refers to the amount of i type products consumed in the production of products other than the n types of products listed in the input and output table.
Yi represents the amount of the final product of the i type. In the input and output table, the final product represents the product that has completed final processing at that time in the course of production and which can be used or provided directly for social consumption. It consists of consumer goods, products invested in basic construction, additions to the reserves in storage, net exports (exports minus imports).
[notes continue]

[continuation of Table 1 notes]

X_i represents the total production of i type products.
T_j represents the amount of labor used in the process of producing j type products.
K represents the amount of fixed funds used in the process of producing j type products.
U, V respectively represent the labor force and fixed funds used to produce products other than the n types of products listed in the input and output table.

The products for other productive uses in the real object input and output table occupy an important position in the yield of each department. Its production is determined by such factors as the development of productivity, the scale of the real object input and output table, and the degree to which the departments are combined. When all other factors remain unchanged, the more developed the productivity, the wider the usefulness of the products, the larger the proportion of products for other productive uses in the yield. But the larger the scale of the input and output table, the higher the degree of combination of the departments, the smaller the proportion of the products for other productive uses in the yield. In the input and output table of 61 major products of our nation compiled in 1973, the proportion of products for other productive uses in the yield of each department is shown as a percentage in the following:

Table 2.

Types of products	W_i/X_i (percent)	Types of products	W_i/X_i (percent)
Food grains	7.89	Electricity	31.64
Cotton	4.52	Raw coal	24.71
Tobacco	0	Crude oil	1.39
Cotton yarn	21.73	Gasoline, kerosene, diesel oil, lubricating oil, heavy oil	21.63
Cotton cloth	9.70	Pig iron	13.05
Chemical fibers	54.00	Steel	5.34
Salt	13.41	Steel materials	50.50
Sewing machines	0	Timber	33.93
Bicycles	0	Sulfuric acid	27.41
Wristwatches	0	Outer tires	15.29

Not listed in Table 2 are 41 types of products. The proportion of products for other productive uses in the yield is very small, mostly zero.

When compiling the input and output table for the reporting period, the numerical value of W_i is based on actual statistical information. When we utilize the real object input and output table in planning and calculation and forecasting, we need to study and determine the period of the plan, or the problem of methodology of W_i of the forecast period.

Theoretically speaking, the quantity of products for other productive uses during the planned period is directly linked to the yields and the consumption coefficients of the various products not listed in the input and output table of the planned period. But the types of products not listed in the input and output table are many, they cannot be calculated one by one, and at the same time, we have discovered in research that the yields and the consumption coefficients of the products not listed in the input and output table are frequently closely linked to the yields and the consumption coefficients of the products listed in the input and output table. For example, electrical soldering strips are not listed as a product in the input and output table. We want to determine the amount of steel consumed in the production of electrical soldering strips. But within the planned period, the yield of electrical soldering strips is closely linked to the yield of various machinery products. When the planned production of machinery products listed in the input and output table increases, the need for electrical soldering strips will also increase, thus, the amount of steel needed to produce electrical soldering strips which belong to products for other productive uses will increase. Therefore, we can regard the products for other productive uses as a function of the yield of various types of products listed in the input and output table.

We utilized the statistical data of 1962-1975 for statistical analysis and performed a lot of computations on the computer. We discovered that the consumption of products of the various categories of products listed in the input and output table, $\left(\sum_{j=1}^{61} A_{ij} X_j\right)$, and its productive use (W_j) have a close linear correlation or a nonlinear correlation. We used regressive analysis to calculate and compare many function types (such as linear equations, power functions, power functions after translation of axis, index functions, index functions after translation of axis, hyperbolic function) and to find the best fit curve, and we have discovered that the function types of W_j are of the following:

1. For some products such as rubber and sodium carbonate, their other productive uses and the consumption of products listed in the input and output table have a close linear correlation. Let us take sodium carbonate as an example, its graph is generally as follows:

We use the least square method to find the linear regressive equation for sodium carbonate as follows:

$$W_i = 2.1394 + 6.3484 \left(\sum_{j=1}^{61} A_{ij} X_j\right) \qquad (5)$$

For these products, their correlation coefficient is frequently as high as over 0.97 or 0.98, for example, the correlation coefficient of sodium carbonate reaches 0.9997 (Z sample K = 14). Checking the table of correlation coefficients we find that when the believability is 0.01, K = 14, its critical value is 0.623, and because 0.9997 is greater than 0.623, it shows a close linear correlation exists between the two.

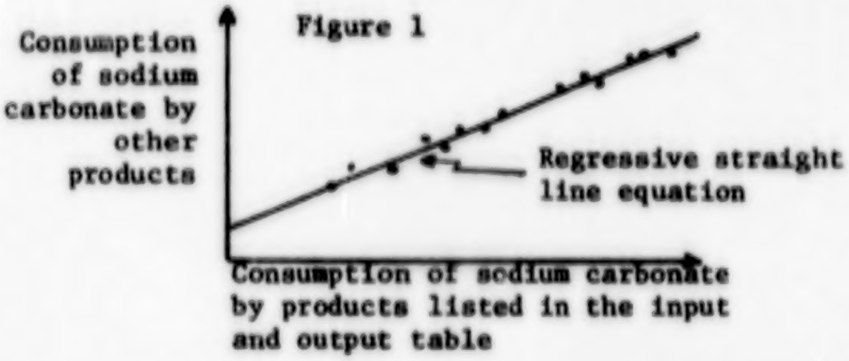
Figure 1

2. For some products like tires and coal, the rate of development of other productive uses is slower than the rate of development of the consumption of the products listed in the input and output table. Take coal as an example, its graph is generally as follows:

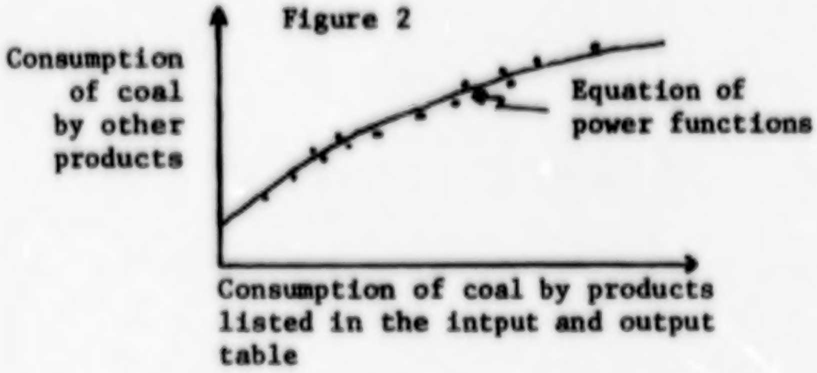
Figure 2

For these types of products, the use of power functions to fit the curve frequently produces very good results. Their correlation index u often reaches 0.99 (Z sample number K = 14). Their functional form is

$$Wi = hi_1 \left(\sum_{j=1}^{61} Aij\ Xj \right)^{hi_2} + hi_3 , \quad (6)$$

$$0 < hi_2 < 1$$

Take coal as an example, the calculated results are as follows:

$$Wi = 62.33[illegible]9 \left(\sum_{j=1}^{61} Aij\ Xj \right)^{0.5652} - 6000 \quad (7)$$

Its correlation index u = 0.9955.

3. For some other products, the rate of development of other productive uses is faster than the rate of development of consumption of products listed in the input and output table. Their graph is generally as follows:

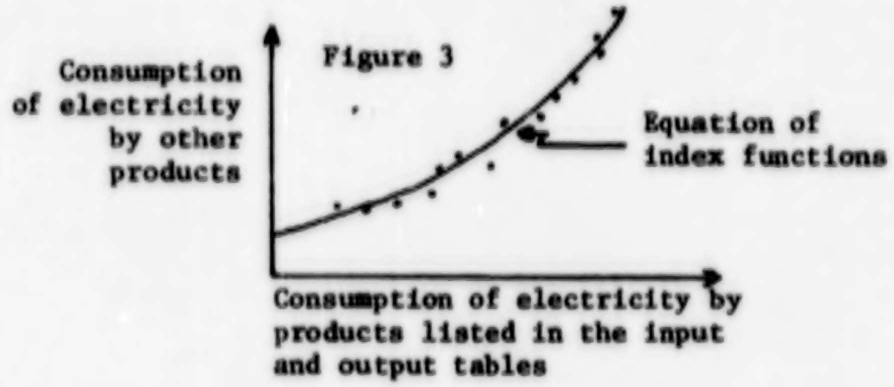
Figure 3

At this time, using the following index function

$$Wi = hi_1 \, E^{hi_2 \left(\sum_{j=1}^{61} Aij \, Xj \right)} + hi_3$$

$$(0 < hi_2 < 1) \qquad (8)$$

to fit the curve produces good results. Its correlation index is also as high as 0.99 (Z sample number K = 14). Taking electricity as an example, the results of calculations are as follows:

$$Wi = 72.6866 E^{0.0023 \left(\sum_{j=1}^{61} Aij \, Xj \right)} \qquad (9)$$

Its correlation index is as high as 0.9944.

When we finally determine the shape of the curves that fit the various products during the planned period, we must take into consideration the degree of fit of the curve calculated from the statistical data of past years and we must analyze the economic situation during the planned period and consider which type of functional form is most suited to the situation of the planned period. In addition, we must note that the curve fitted by using statistical data can reflect the quantitative relation between phenomena only when the variable varies within a definite range. Beyond this definite range, this functional form frequently cannot reflect the relationship between them at all.

Generally speaking, the nonlinear function of the coefficient of other productive uses of various products $X = (X_1, X_2, \cdots \cdots, Xn)$, i.e.,

$$Wi = Wi \left(\sum_{j=1}^{n} Aij \, Xj \right) = Wi(X) \qquad (10)$$

Thus, we can obtain a type of nonlinear input and output model. This model has the following three uses in planning work:

1. It can examine the balance of presently existing plans

If the planned production of major products of the national economy for the following fiscal year has already been established by traditional methods, the above nonlinear real object input and output model can be used to examine the balance of the current plan. At this time, we must first note whether the specifications of the indicators of various products are the same. For example, during the reporting period, coke listed in the input and output table includes three types of coke, coke produced by mechanized coking furnaces, coke produced by simple coking furnaces and coke produced by earth kilns, while the draft of the plan includes only one type of coke, coke produced by mechanized coking furnaces, thus, we must convert so that the specifications are the same. At this time, we can perform a linear transformation $\mathcal{R}$ for the indicators of the plan so that they will be the same as the specifications of the departmental classifications in the input and output table for the reporting period. Let Z represent the column vector of the planned yield of the particular product and R represent the matrix of the linear transformation $\mathcal{R}$, then we have

$$X = RZ \qquad (11)$$

After the specifications of the indicators have been unified, we should also determine the form of the functional expression of related coefficients and Wi in the balanced modular form (4) of the planned period, and after repeated checking and examination, we can perform the following calculation

$$\delta = X - AX - W - Y \qquad (12)$$

Here, $\delta = (\delta_1, \delta_2, \cdots \cdots, \delta_{61})'$, δi represents the difference between the amount of planned production and the need of the various products. When $\delta i > 0$, it means according to this plan, the resources of i type products (domestically produced and imported) surpass the need, and the supply is larger than the demand. When $\delta i < 0$, it means the demand is greater than the supply, and to reflect the relative imbalance of i type products, we can perform the following calculations. Let

$$Hi = \delta i/Xi \quad (i = 1, 2, \cdots \cdots, 61) \qquad (13)$$

Here Hi represents the imbalance coefficient of the i type product. It indicates the difference δi as a percentage of yield Xi of the i type product. Obviously, when the imbalance coefficients of some types of products surpass a certain numerical value (for example, surpassing 10 percent), this plan will have to be studied anew and revised.

2. It can provide a reference plan for drawing up the production plan for major products

The main characteristic of using the input and output method to draw up plans is that the final product is used as the starting point for planning. When the planned indicators of the final products are determined, related formulas can be used to calculate the total yield of the various types of products. The planned indicators of the final products can be separately determined according to their component parts. For example, for the cost of living, we can calculate many plans according to different demands. First we can calculate the lowest cost during the planned period, i.e., we assume that the level of average cost of living per person in the city and the village remains unchanged during the planned period, but we take population growth into consideration, therefore, the cost of living during the planned period will still increase over the past period, this is the minimum indicator that must be assured. The second is the assumption that during the planned period, the level of the average cost of living per person is higher than the reporting period (such as a separate increase of 2, 5 or 10 percent). From this we can calculate the amount of the cost of living for the planned period. For the other component parts of the final product, we can also determine many plans according to different demands and finally arrive at several plans for the final products of the planned period.

After the several plans for the final products of the planned period have been determined, we still need to determine the direct consumption coefficient of the various products during the planned period and the functional relations of other productive uses of the products, then we solve the nonlinear model (4) of the real object input and output table and obtain the various reference plans for the yield of these major products during the planned period. The solution process can be carried out using the following method:

a. Using repeated substitution

When the numerical values of Yi and Aij and the functional relation of Wi(X) are determined, to solve the following equation:

$$\sum_{j=1}^{61} Aij\ Xj + Wi(X) + Yi = Xi \qquad (i = 1, 2, \cdots, 61) \tag{14}$$

we can use repeated substitution to perform the computations. Let

$$X_i^{(k)} = \sum_{j=1}^{61} Aij\ Xj^{(k-1)} + Wi\ (X^{(k-1)}) + Yi \qquad (i = 1, 2, \cdots, 61) \tag{15}$$

Here, $X_i^{(k)}$ represents the numerical value of the Kth repeated substitution of X_i, $X_i^{(0)}$ is the initial value of X_i. To lessen the number of repeated substitutions, the initial value $X_i^{(0)}$ can take the actual quantities of the various products produced during the reporting period. Results of actual computations show that the rate of convergence of this computational method is very fast, when $n = 61$, only 3 minutes are required to obtain the results of computation using a 108 computer with a computational speed of 50,000 to 70,000 operations per second. But it cannot be guaranteed that in all cases the computational procedure is convergent.

b. Reducing it to a problem of solving for the sum of least squares

To solve the nonlinear input and output model (14), we can construct the following problem of the sum of least squares, then we can use related methods in nonlinear planning to find the solution.

Let

$$\delta i(X) = Xi - \sum_{j=1}^{61} Aij\ Xj - Wi(X) - Yi$$

$$(i = 1, 2, \cdots, 61) \qquad (16)$$

Then we solve for the minimum value of

$$Q(X) = \sum_{i=1}^{61} \delta_i^2\ (X) \qquad (17)$$

Obviously, if the group of equations (14) has a solution, the Q(X) will also have a minimum value and it should equal zero. Conversely, if (17) has a minimum value, and when $X = X'$, $Q(X')$ equals zero, then X' must be the solution of the group of equations (14). Therefore, the problem is reduced to the problem of solving the unlimited extreme values of Q(X).

To solve the minimur value problem of Q(X), we can use the improved Gauss-Newton method, the spiral method or other methods of solution. We performed the computations on the 108 computer manufactured domestically and its convergence speed was very slow.*

We let X^* represent the solution obtained by the above method. We perform an inverse transformation $\mathcal{R}^{-1}$ of the linear transformation $\mathcal{R}$ of X^*, and let R^{-1} represent the corresponding matrix of the inverse transformation $\mathcal{R}^{-1}$, then

$$Z^* = R^{-1}X^* \qquad (18)$$

which is the reference plan sought. Because several different plans for the final products of the planned period are drawn up, we can obtain several different plans for the production plan. These plans can serve as references for drawing up the national economic plan.

3. It can calculate the need for labor resources in the production sector during the planned period

The need L for labor resources in the production sector during the planned period can be calculated by using the following formula

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*If the terms for other productive uses are computed using power functions, then during the process of solution, $\sum_{j=1}^{n} Aij\ Xj$ must not be negative.

$$L = t_1x_1' + t_2x_2' + \cdots + tnxn + u' \qquad (19)$$

Here, t_j represents the need for labor force to produce a unit of type j product during the planned period. It can be determined after it has been revised on the basis of the statistical data of the reporting period. As technology progresses and as the labor production rate increases, the numerical value of t_j gradually lowers, obviously

$$t = \frac{T_j}{X_j}, \quad (j = 1, 2, \cdots, n) \qquad (20)$$

u' represents the need for labor resources to produce products not listed in the input and output table of the planned period.

4. It can calculate the need for fixed funds during the planned period

The need G for fixed funds in the production sector during the planned period can be calculated by using the following formula

$$G = K_1X_1' + K_2X_2' + \cdots + K_nX_n' + V' \qquad (21)$$

Here, K is the coefficient of the fixed funds for the j type product. It represents the need for fixed funds to produce a unit of the j type product during the planned period. It can similarly be determined after it has been revised on the basis of the numerical values of the reporting period. V' represents the need for fixed funds to produce products not listed in the input and output table during the planned period. By comparing the need for fixed funds in the production sector during the planned period and that during the reporting period we can obtain the amount of fixed funds needed additionally to assure completion of the production task.

In addition, on the basis of this nonlinear real object type input and output model, we can construct an optimum model plan. We let the group of equations (4) be the basic limiting conditions, and add the limiting conditions of productive capability, natural resources, labor force of the various products during the planned period, and the equation of the balance of supply and demand of major consumer products. This optimum model plan can use maximization of the sum of the production values of the various products or the sum of the final production values of the various products as the target function. There are many advantages to using the optimum model plan to draw up the national economic plan. On the one hand, it can balance and coordinate the production plans of the major products so that the yield of each type of product can be assured of having a labor objective, labor information and labor force. On the other hand, it can maximize the speed of economic development. Utilizing the optimum model plan to draw up the national economic plan is a long-term goal, requiring our nation's statistical workers, planning workers and systems scientists to achieve together. (The individual equations and models covered in this article have already been discussed in the article by Comrade Chen Xikang [7115 6932 1663] published in issue No 1, 1980, of this publication, omitted here--editor.)

9296
CSO: 4006/336

FINANCE AND BANKING

NINGXIA BANKS STRENGTHEN CREDIT CONTROLS

Yinchuan NINGXIA RIBAO in Chinese 13 Mar 81 p 2

[Article: "Our Region's People's Banks Strengthen Credit Management"]

[Text] Workers and staff members of all levels of people's banks in our region, conscientiously studying the spirit of the Central Committee's work conference, have adopted effective measures to realistically strengthen credit management, strictly controlling the amount of money put into circulation, promoting the readjustement of the economy, and stabilizing market prices.

All levels of people's banks of our region have deliberately brought into play the economic lever effect, utilizing credit funds, actively supporting production, promoting the circulation of commodities, and expanding the marketing of commodities. Last year throughout the region the amount of money withdrawn from circulation through the sale of commodities was 508.85 million yuan, 84.25 million yuan more than was removed from circulation the previous year, a 19.9 percent increase.

For the past few years, due to the fact that the pace of capital construction has been too fast, we have gone into the red financially, causing the banks to issue more money and the amount of money in circulation in the marketplace to be too large. This has already become a conspicuous problem in our economic life. For this reason, all levels of people's banks in our region have decided, in cooperation with the various economic departments, to make great efforts in every area to increase income and cut down on expenses, implement the spirit of withdrawing much money from circulation and putting little money into circulation, and resolutely complete this year's task of withdrawing money from circulation. This year, the state has determined that the net amount of money put into circulation by the people's banks in our region will be less than last year's. In order to ensure that we don't the state's plan for the amount of money to be put into circulation, the various levels of people's banks have adopted resolute measures, strictly controlling the 1980 year-end cash surplus deposits of all units, stepping up cash reserve management, and preventing indiscriminate expenditures. And, in cooperation with the Agricultural Bank, the Bank of China, the Construction Bank, and credit cooperatives, they are strictly supervising the cash income and expenditures of all units opening accounts, cutting down on unreasonable cash reserves. In accordance with the relevant regulations of the State Council, they are conscientiously supervising wage funds and the payment of bonuses, and resolutely controlling the excessive issuing of bonuses. The banks' issuing of loans must be under the direction of the state's plans, and based on [the state's] credit policy, and the direction in which the utilization of funds will be carried our must be tightly managed so that every loan is well utilized. At the same time, they have strengthened the management of circulating capital, and are assisting enterprises in cutting back on unreasonable reserves and actively dealing with overstocked goods and materials. They are reducing the proportion of circulating capital. In the first half of this year, middle and long-term equipment loans were tightly controlled, and were required to produce economic results; loans for redundant or ill-considered construction were not allowed; nor were loans which exceeded the quota. Along with strictly controlling credit and cash expenditure, they will actively support enterprises in enlivening production and enlivening markets in line with the principle of "putting a priority on excellence"; actively support the light and textile industries, communications and transportation, and the development of the production of energy, and will particularly will give preferential support to enterprises producing or purchasing consumer goods for which there is a good market and that satisfy people's needs, that will be used to supply the market, and for export. As for those enterprises which still have the conditions necessary to maintain production management, the people's banks will actively help them to improve management and administration, and produce high-quality goods for which there is a good market and which satisfy the needs of the people. They will also energetically support cultural, service, and public-use enterprises, broaden the avenues of service, and step up the withdrawal of money from circulation through means other than the sale of commodities. All levels of people's banks will energetically organize all types of savings programs directed at the public, guaranteeing the completion of this year's task of a net increase in savings in cities and towns of 22 million yuan, and strengthening our credit resources.

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CSO: 4006/300

FINANCIAL PERSONNEL AIR VIEWS ON DEFICITS

Beijing CAIZHENG [FINANCE] in Chinese No 3, 1981 pp 25-28

[Article: "The Views of Some of Our Country's Finance Personnel on Budget Deficits"]

> [Text] Representatives taking part in the 1980 annual China Finance Association Meeting held at the end of the year in Kunming and in the Fourth National Symposium on Theory of Finance conducted an earnest discussion on the problems of deficits. Here we present excerpts from the views expressed by several comrades.

Deng Ziji [6772 1311 1015] (Assistant Professor, Xiamen University)

1. Why Our Country Must Not Practice Deficit Finance

The main reasons why our country must not practice deficit finance stem first from the ownership system, economic conditions and the level of the productive forces. The capitalist countries are under the system of private ownership of the means of production, and there is relative overproduction, so that they engage in deficit financing to increase expenditure and thereby stimulate demand. We are a socialist country and are under the system of public ownership of the means of production; our resources are limited, the level of our productive forces is low, and in general commodity supplies are insufficient to meet demand. If we artificially expand buying power, we will unavoidably produce a devaluation of the currency and a rise in commodity prices, which are detrimental to the expansion of state construction for production and to improvement of the people's livelihood, and even affect the national political situation and harm stability and unity. Second, the production objective of capitalism is to gain maximum profits for the capitalists. The practice of deficit financing by capitalist countries is largely beneficial to the capitalists and largely detrimental to the working people. We are a socialist country and we must not carry on construction at a deficit and lower the people's standard of living. Third, we must refrain from deficit finance for the sake of unity, stability and the four modernizations.

2. Deficit Finance Should Not Be Used as an Economic Lever to Stimulate the Economy

In our socialist country, deficit financing is not the same thing as government bonds. Government bonds are a way of making up for a deficit and purposefully adjusting state income distribution. They are advance buying power and revenue for the year in question, and are materially backed: they are a monetary phenomenon in which the bond purchasers turn over commodities which they have to the government. Bond issuance not only cannot lead to devaluation, but on the contrary can result in withdrawal of currency from circulation, so that it is a method of reducing a deficit. But deficit financing is an artificial financial imbalance not materially secured and causes inflation. It cannot be used as an economic lever to stimulate the economy, but rather can produce negative effects.

Chen Gong [7115 0364] (Assistant Professor, China People's University)

1. The theory that "deficits are harmless" is both theoretically and practically unsound. The harm done by deficit financing shows up strongly in inflation, by expanding the difference between the buying power of existing currency and commodity supply capacity. In discussing inflation, attention formerly was paid only to the currency that was issued, while in reality inflation is expressed not only as a currency issue exceeding objective needs, but also as an inflation of funds in banks. But because the effect on currency issue shows up primarily as shortages of consumer goods and as price increases, it directly affects people's livelihood and easily attracts people's concern. Its effect of inflating funds in banks is expressed primarily in relationships between enterprises, which may easily be overlooked, while in reality this latter effect is more far-reaching than the former. Accordingly, the correct attitude and policy with regard to the current financial deficit should be to decrease it resolutely and to eliminate it.

2. How did the 1979 deficit arise? In terms of events, excessive increases in the prices of agricultural crops, wage increases and expansion of the scale of capital construction were the factors leading to the deficit. But the main factor was the excessive scale of capital construction, because increased prices and wages are a debt paid back over a number of years, are necessary, and at most may be said to have occurred a little faster than they should have, while in no case should they be considered to have been an error. But an excessive scale of capital construction also involves excessive accumulation. High accumulation and capital construction levels can eliminate the effects of wage and price increases, while if a high level of accumulation can still be maintained while there are wage and price increases, there will be a deficit.

The 1979 deficit had deep-rooted historical origins. The financial balance during the First Five-Year Plan was fundamentally correct. During the Great Leap Forward there was fictitious income and real expenditure, so that there was a real deficit. Deficits in the 10 catastrophic years had three characteristics: (a) on paper there were 4 deficit years; (b) capital construction expenditures were maintained at a high percentage of financial outlays, with the highest yearly figure being 46 percent; (c) when the budget was organized at the beginning of the year, expenditures were not planned on the basis of receipts, but instead receipts were planned on the basis of expenditures, producing not a reserve but a shortfall. Accordingly, the combination of shortage, deficit and inflation is the inevitable logic of development. It must be admitted that deficit financing was actually pursued during those 10 years. After the "gang of four" was smashed, "left" influence was underestimated and financial revenue levels were incorrectly forecast, resulting in the development of the "July 8" program, which produced new difficulties for financial equilibrium.

SU Ting [5685 2185] (Assistant Professor, Shanghai Institute of Finance)

1. Deficit budgets and budget deficits. There are two types of deficit finance. One is a deficit in drawing up the budget, i.e., when the year's receipts and expenditures do not match, which is called a "deficit budget"; the other is when the budget itself is balanced, but a deficit occurs in the results of its implementation, which is called a "budget deficit." Deficit budgets are a matter of policy and budget deficits are a matter of implementation. Although our country has a deficit, it is not using a deficit budget. Capitalist countries pursue a Keynesian economic policy of using a deficit budget to expand financial expenditures, and to increase the government's investment in public undertakings so as to stimulate employment, expand consumption and stimulate production in an attempt to alleviate economic crisis and ease unemployment. But deficit financing not only cannot eliminate the crisis, but instead makes the cyclic economic fluctuations of capitalist society more frequent. The prerequisite for capitalist countries' deficit budgets is relative overproduction of commodities in their societies, while in our country production generally cannot meet demand, so that if we institute deficit budgets, we will further increase commodity shortages.

2. Issuance of bonds is not the same as a deficit, and the two should not be equated. The reasons are as follows. a. A bond issue represents real income for the year in question and is a commodity phenomenon in which the bond purchasers turn over commodities under their control to their own or a foreign government. Like other budgetary income, it is materially backed, and is fundamentally different from deficits, which have no commodity backing. Especially in our country, where bonds cannot be mortgaged or sold, all connection with inflation is removed, in contrast to bond issues in capitalist society. b. If bond issues are not considered as budgetary income, their redemption naturally cannot be considered as budgetary outlays. But it is problematical whether the former can be considered a real deficit and the latter a real surplus. c. Bonds are an anticipatory expenditure of state revenue, but this anticipatory outlay is not a deficit: the key is the fact that the bond issue is a transfer of that country's or another country's existing national income. The commodities which it embodies already exist in domestic or international society. Using this materially secured revenue as an anticipatory expenditure does not change the original value of the currency, while the increased currency issue resulting from deficits has the disadvantage of producing devaluation.

3. Budgetary deficits and commodity supply and demand. In terms of the physical situation, a deficit means that the commodities distributed by the state budget

exceed those which the state has in its budget, so that it has no commodity backing. Every time there is a budget deficit, this means that the budget correspondingly diverts commodities in society for other uses, so that there should arise an imbalance in which there is excess money and insufficient commodities. But because of the complexity of the real situation, the effect of a budget deficit on commodity supply and demand does not necessarily manifest itself directly and completely, owing to the effects of other factors. If a budget deficit is an expansion beyond planned capital construction investments, shortages in the means of production will result. But if at that time total national labor compensation does not increase more than planned, the supply of consumer goods and the public's ability to pay may still remain at the same level. In contrast, when there is not a budget deficit, if there are no markets for commodities and supply and demand are out of balance, market shortages may also result.

HE Zhenyi [0149 2182 0001] (Deputy Director, Finance Research Laboratory, Trade Commodity Economics Research Institute, China Academy of Social Sciences)

1. The Reasons for Deficits

The 1979 deficit, like previous ones, was produced by "left" ideas in economics and by trying to act beyond capabilities. It is unfair to say that increased wages and higher prices for some agricultural products were the cause of the 1979 financial deficit. The wage increases and rise in the purchase prices of agricultural products in 1979 did not produce the revenue shortage in the state budget. The 1979 revenue shortage was only 1.6 billion yuan, and the effect of increased wages and agricultural product prices was miniscule. The reason that a deficit occurred in 1979 was excessive budget expenditure, and most of the excessive budget expenditure went for capital construction and production accumulation. Clearly the direct cause of the 1979 finance deficit was that budgetary outlay leaks were not stopped, so that production-related capital construction outlays grew excessively.

2. Deficits Are a Negative Factor in Socialist Economics

To connect the excellent economic situation in 1979 with the budgetary deficit and claim that the deficit resulted in an improvement of the economic situation is unfounded. The development of the economy in 1979 was the result of the correctness of the Third Plenum's line and of the party's implementation of policy, and the increases in agricultural product prices and in wages were positive factors which stimulated the development of the economic situation. The deficit-financed production-related capital construction investments did not have a positive economic effect in 1979, but rather produced a negative effect, because excessive capital construction put pressure on production and aggravated commodity and energy shortages. If less capital construction had been carried out, there would not have been a deficit, with the result that energy and raw materials would have been more nearly sufficient, industrial production would have developed faster, and the economic situation would have been better. Accordingly, the 1979 deficit was a negative factor in the excellent economic situation.

It is even more unfounded to claim that the 1979 financial deficit favored the economic readjustment. In reality, the 1979 budget was a negative factor in the readjustment, which increased difficulties. If the original budget had been implemented and a deficit had not been produced, the ratio between national income accumulation and consumption in 1979 would have been 3 : 7, and the accumulation rate would have been 30.3 percent. But owing to excessive capital construction outlays, the accumulation rate was 33.6 percent, which slowed the speed of readjustment, and capital construction items were excessively predominant, a circumstance which if continued will lead to difficulties and losses.

There is no justification for the claim that the deficit resulted from reforms. On the contrary, if it had not been for the reforms, the economic situation would not have been as good as it was, and the financial deficit would have been graver. Without reforms, would light industry and textiles have developed so well? Without reforms, would the enterprises have had so much enthusiasm and initiative? Without reforms, would the agricultural situation have been as good as it was? In the past, an effective effort was not made in readjustment work; it is absolutely necessary that we give readjustment top priority and make it a central task, but this does not mean that the reforms are incorrect. Without reforms we would have no recourse, and we must continue to reform during the readjustment; but the pace of reform should be slowed a bit so as to be beneficial to the readjustment.

CHEN Minzhi [7115 2404 0037] and YIN Wenjing [1438 2429 2417] (Deputy Director and professor respectively of Departmental Economic Research Institute, Shanghai Social Sciences Academy)

The 1979 and 1980 financial deficits were an inevitable product of problems of development of the national economy. If the national economy were developing normally, budget deficits would certainly not occur, and because the socialist planned economy is vastly superior, the economy should improve and expand continuously. But because of various factors, our national economy has not developed in accordance with the nature of socialism. This is the result of "left" errors in economics, and has occurred because state leadership of the economy has not correctly embodied the interests of the proletariat, and because policies have been incorrect. The experience of 30 years must be conscientiously summed up, so that our "tuition" will not be wasted.

To eliminate financial deficits, we should focus on the following points:

a. Persistently reduce the scale of capital construction. To this end, we should firmly resolve to cut back on what should be cut back; as in 1961, we should have a high level of authority and a high degree of centralization. Particular stress should now be laid on financial oversight. Everything that has been laid down should be overseen by the financial organs, and changes made "at the will of the powerful" should not be permitted. Economic democracy should be developed.

b. Production should be expanded and market equilibrium energetically sought. The greatest danger produced by a deficit is inflation and market shortages. Only by expanding production can we bring the market into balance. If industries throughout the country could increase labor productivity and tax payments to the same level as Shanghai within 1 or 2 years, they could provide great wealth to society and furnish hugh financial revenues to the state. For this purpose, we suggest that the most experienced managers, technical personnel and workers in every branch of industry in the country be organized to help backward enterprises in their sectors and improve administration and management in such enterprises; this may be the most effective way of developing the economy. The benefits of this approach could be made the basis for future integration and could furnish personnel. Current overstocks of steel materials and equipment should be put to use, and "dead" objects brought to life so as to withdraw currency from circulation. In addition, excess productive forces in military industrial enterprises should be converted to civilian production.

YE Zhenpeng [0673 2182 7720] (Lecturer, Central Finance and Banking Academy)

To determine why we now have a previously unheard-of deficit of such a large size, which has continued through a number of years, we should analyze the economic causes and ideological sources in terms of the overall national economic situation.

In terms of leadership ideology, the deficit has resulted from the "left" ideology in economic construction. Economically, it has been caused by irrationality in the economic structure. The relationship between the two factors is that incorrect ideology produced a distorted economic structure, resulting in large investments in the national economy with low yields, or even investments with no yield, so that not only was new capital construction unable to develop productive capabilities, but simple and expanded reproduction were put under pressure. This kind of economic situation inevitably causes stagnation of the financial departments' revenues, and inability to decrease expenditures and to expand receipts, thereby producing a deficit.

As a result, the key to relieving the deficit is readjustment of the economic structure. The first step is to decrease accumulation and cut back on capital construction so that the nationwide scale of capital construction is in accordance with national capabilities; given this overall prerequisite, the readjustment items should be given priority in accordance with the basic economic laws of socialism and the law of planned, proportional development. The weak links in the national economy should be readjusted first, with the priority determined on the basis of the gravity of the situation; restructuring and modernization should take priority over capital construction. Next, the policy of "closing, ceasing production, merging or changing production" should be implemented among existing enterprises, those with high consumption and low effectiveness should be eliminated or reformed, and management results should be improved. Only by combining readjustment of the macroeconomy and rectification of the microeconomy can we bring the national economy into the proper proportions, get it on track and eliminate the deficit.

GE Zhida [5514 5268 6671] (Deputy Director, Scientific Research Institute of Finance, Ministry of Finance)

The harm done by finance deficits is that under certain circumstances it can temporarily be invisible and not immediately be thoroughly exposed, but we should not incorrectly believe that the deficit has not gravely affected economic life, nor should we take this as proof of the theory that "deficits do not harm..." Large deficits lasting several years can cause particularly grave harm to the national economy and the people's livelihood:

1. Financial deficits can aggravate the imbalance between accumulation and consumption. When there is a financial deficit, this indicates that distribution of national income is out of balance with production, i.e., the redistribution of national income has been excessive. At the same time, a large proportion of expenditures are used for investment in capital construction, so that the scale of capital construction exceeds current material conditions, and the people's livelihood cannot be correspondingly improved; the increases in expenditures on administration and management have also exceeded financial capacities. Thus the imbalances between production and distribution and between accumulation and consumption are aggravated.

2. Financial deficits can foster loss and waste in the economy. A financial deficit means that the scale of construction has exceeded national capabilities, so that basic construction cannot produce productive forces, and there is investment without return; when the scale of investment gets out of control, the scale of capital construction is too large, the front becomes overextended, there is excessive duplication of construction, "the older plants and large plants cannot get their fill and new and small plants are springing up everywhere," and the investment structure is irrational, this not only produced competition between entities, but makes accumulation squeeze out consumption, capital construction squeeze out production, new factories squeeze out old factories, and industry squeeze out agriculture, with the result that nobody makes any progress, there are a great many half-finished projects, there is a breakdown of the rational production structure, and agriculture, light industry and heavy industry are all out of balance and out of proportion with each other, and many production construction projects lack energy and raw materials and cannot produce the requisite economic effect, so that enterprises are being closed down faster than they can be started, operating costs are high and quality is low, and ultimately the national economy suffers great losses and waste.

3. A financial deficit is an important factor increasing the issuance of currency and producing price rises, market shortages and instability of the people's livelihood. Financial deficit will necessarily cause increased issuance of currency, resulting in an increase in the disproportion between commodity supply capacities and purchasing power, so that large amounts of currency cannot be withdrawn from circulation, the currency becomes devalued, and prices rise. Price increases also increase the financial organs' outlays and increase the financial deficit; this vicious circle can dampen the working people's enthusiasm and harm stability and unity.

The view that deficits are harmless is untenable. In certain years, to be sure, because of objectively unforeseeable events or errors in work, there were small, not entirely avoidable deficits resulting from implementation of the budget. But making deficit budgets a policy is distinct from the chance occurrence of deficits in implementation of the budgets; such cases should be analyzed concretely in terms of the size of the deficit, and the length of its persistence and the different degrees of harm which result. The multiyear, large-size deficit which has occurred in recent years is an evil consequence of the ten years of damage done by Lin Biao and the "gang of four" and by "left" ideology; given leadership on a correct line it would not necessarily have occurred. Currently, an important task in our readjustment of the economy is that of striving to balance income and expenditures and to decrease financial deficits.

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FINANCE AND BANKING

MODERN MANAGEMENT ACCOUNTING CHARACTERISTICS OUTLINED

Xiamen ZHONGGUO JINGJIWENTI [CHINA'S ECONOMIC ISSUES] in Chinese No 1, 20 Jan 81 pp 39-46

[Article by Yu Xuying [0151 4872 4964]: "The Main Characteristics of Modern Management Accounting and the Problem of Understanding and Utilizing It; What Is Modern Management Accounting?"]

[Text] Modern management accounting is a part of modern management science. It is a new scientific field that developed rapidly after World War II. The form and development of modern management science have laid the theoretical foundation and have served to guide the formation and development of modern management accounting. They are closely linked.

Everyone knows capitalism as a whole is anarchism, but in an enterprise and a large company, strict scientific management is exercised. This is because after the middle of this century, the capitalist economy further centralized, and operations of even larger scale emerged, competition became fiercer, therefore strong demands were placed upon the internal management of enterprises to become more rational and scientific. Under this situation, if an enterprise still remained as before, simply allowing the management personnel to manage by experience, their senses and subjective will, it was sure that the economic results that the enterprises should obtain could not be realized, and the enterprise may even be eliminated in fierce competition. Therefore, the internal and external factors of capitalist enterprises all forced the capitalists to rely heavily on the use of specially trained experts and professionals to carry out scientific management of modern enterprises. Only through management by correctly utilizing scientific rules and self conscientiously acting according to scientific rules can an enterprise most economically and most effectively utilize and grasp manpower, materials and finances to strive towards realization of the maximum economic results for the survival and development of the enterprise so that it will be able to maintain an undefeated position in fierce competition. Based on this situation, the capitalist class has accumulated rice experience and more skillful techniques of modern economic management, and modern management science has developed very rapidly in the few recent decades.

Modern management science has two important branches, one is called "operations research."[1] It mainly uses the principles and methods of modern mathematics and mathematical statistics to establish many numerical management methods and techniques to solve the problem of how to best organize productivity. The other is called "behavioral science." It mainly uses the principles of psychology and sociology to explore the problems of how to adjust and improve the relationship between men, how to guide and encourage man to fully develop his initiative and enthusiasm. Practice proves that the management of large scale modern enterprises using the principles and methods established by operations research and behavioral science can effectively eliminate subjective capriciousness in management work, and it can establish rational organization, arrangement and utilization of manpower, materials and finances on a strict scientific foundation. This is extremely helpful to the improvement of the level of management of enterprises and to the realization of maximum economic results.

Modern management accounting, as a part of modern management science, has branched out from traditional accounting to become an independent branch of science parallel to "financial accounting" and it has gone through a process of gradual development. Over the past few decades, it has mainly developed in two directions:

One direction is based on data of financial accounting. Some aspects of such data undergo necessary processing, some are reformed, and some are extended in scope so that they can more effectively serve internal management of enterprises. These have become a component of modern management accounting.

The other direction is the inclusion of the research results of operations research and behavioral science in modern management sciences and their application in accounting, creating their own theories, methods and techniques manifested as mutual penetration and combination of multidisciplinary branches of science and forming a new comprehensive management science so that this new science may have an even broader function to analyze the past, plan for the future, and control the economic activities of enterprises and proceed towards the predetermined goals, develop a greater function, and gradually developing into a pioneer science. Therefore, modern management accounting cannot be understood anymore within the traditional and primitive definition of accounting. The formation, development and increasing maturity of modern management accounting have greatly enriched the content of accounting science. This signifies that accounting science has entered into a brand new stage of development.

The Major Characteristics of Modern Management Accounting

Financial accounting and management accounting are two important fields of present day capitalist accounting. The former mainly serves via periodic financial reports the various social groups that have an economic and beneficial relationship with the enterprise and that are not part of the enterprise. The latter mainly serves the internal management of the enterprise, and adapting to the demands of modern management, it provides useful data for the management department of the enterprise to correctly carry out the best management decisions and effective operations.

Management accounting is different from financial accounting. It has the following main characteristics:

I. It can utilize the data provided by financial accounting in a versatile manner

Financial accounting uniformly uses currency to reflect the economic activity of the enterprise, it must strictly follow the "publicly recognized accounting principles," in step by step combination of concerned data from vouchers, accounts and reports, the predetermined accounting procedures must be strictly followed. There is a rather strict and stable basic structure. Management accounting is not so. It can better serve the internal management of the enterprise, it is not bound by "publicly recognized accounting principles," its structure is rather loose, its scope is even wider, it can skillfully use many and various forms to process, reform and extend the relevant data in financial accounting, and to further increase their function in business management. For example, costs, reclassified and recombined according to its variability, can be divided into two large categories of fixed costs and variable costs. In this way, the dependent relationship between cost and amount of production can be expressed by the following equation:

$$y = a + bx$$

In the above equation, y represents total cost, a represents fixed costs, b represents unit variable costs, x represents the amount of production. Using this equation will allow people to recognize and grasp the trend of increasing and decreasing variations of cost under definite conditions and the basic patterns of such variations. Taking this as the foundation we can make cost forecasts and direct cost computations, analyze the critical point of profit and loss and the mutual relationship among cost-amount of production-profit, analyze differential costs, draw up flexible budgets, etc. Thus, a lot of valuable information can be provided for the enterprise to improve operations and management.

II. Using "decision theory" in operations research as the guide to analyze and evaluate business decisions

In a modern enterprise where large scale production and business activity are complex, operations research has been widely applied in every aspect of operation and management. Decision making is an important function of management. In recent years, foreign nations have conducted broad studies of the theory and method of decision making, and they have gradually formed a field of scientific knowledge called "decision theory," belonging to operations research. Strictly following scientific techniques and the demands of objective economic patterns to carry out the optimum decision in fact signifies precontrol of the productive and operational activities of the enterprise to strive towards realization of the greatest economic result. A complete decision making process generally includes the following steps: determining the goal which the decision is to realize; establishing for later selection several different plans which will reach the goal; analyzing and evaluating related plans; carrying out comprehensive research, and taking into consideration certain nonquantitative factors, balancing the benefits and the losses, determining the optimum plan. The final plan must be chosen according to its optimal character. The criteria for being "optimal" is mainly economic results. According to the scale of the economic results specified in the plans, we can select the plans in order of the largest value or the smallest value (as determined by the characteristics of the indicators), thus, the selection is not subjective and by assumption. In this way, the scientific nature of operational decision making is realized.

Decisions are inseparable from data. Accounting is grasping the information store of data related to the economic activities of the enterprise. Management accountants, to effectively help the management make correct judgments and selections in determining the operational plan, must make scientific forecasts of the results that may be brought about by the various plans to be carried out by the productive and the operational departments to provide the management with an objective basis for correctly carrying out the optimum decision. Therefore, analysis and evaluation of the economic results of various plans which the productive and operational departments may possibly carry out are also important aspects which management accounting must study with emphasis.

Operational decisions include many facets. According to the length of time the decisions will be influential, they can be divided into short term decisions and long term decisions.

It is generally believed that if a certain decision mainly affects the income, expenditure, profit and loss within a year, these decisions are called short term decisions. For example, decision problems concerned with the selection of the arrangement of production of certain products, whether to accept certain special orders, whether to manufacture our own spare parts and components or to buy spare parts and components, to sell the products directly or to futher process them, the selection of different production methods, whether to readjust the market and sales price of certain products, these are all typical short term decision problems. For this type of decision, we must often analyze and compare the effects of different plans upon cost and profit in order to select the optimum plan. For this, the concepts of differential costs, differential income, differential profits must be used. The concept of differential costs refers to the use of one plan as the standard and another plan to calculate the cost to see how large a difference in cost would result. Differential income is also calculated in this way. Subtracting the differential costs from the differential income gives us a remainder which is the differential profit. The differential cost of increasing or decreasing the production of a certain product within the original production capabilities is the variable cost. Because variable costs are directly connected to the production of each product and marketing and sales, increases or decreases in the amount produced will also cause the variable costs to increase or decrease correspondingly. Fixed costs are mainly connected to the formation of the productive capability of the entire enterprise and the normal maintenance of such capability. Increases or decreases in the production of products within a certain range will not affect fixed costs, therefore fixed costs should not be included in differential costs. When a new product is added and additional specialized facilities are needed, then, the differential cost should be the sum of the variable cost and the expenditure related to that special facility. To facilitate explanation, let us look at the simple illustration below:

Let a certain enterprise produce product A, unit selling price is 16 yuan, the normal unit cost is shown in the following table:

Direct materials	5
Direct wage of laborer	4
manufacturing costs:	
Variable cost	2
Fixed cost	3
Total	14

According to the present situation in production, the productive capability of that enterprise still has a definite surplus which can accept follow up orders. Now, a client wants to order 2,000 pieces, offering only 14 yuan per piece, and the order for this batch of products also has some special demands and to meet the demands, special equipment needs to be added at a price of 1500 yuan.

Should this special order be accepted? At first glance, the price offered by the client is equal only to the present cost, and the enterprise has to expend a follow up cost of 1500 yuan. Thus accepting the order seems not to be worth it. To study this problem more fully, we must compare and analyze the differential income and differential cost of accepting the order or not.

Differential income (2000 x 14)	28000
Differential costs:	
Direct materials (2000 x 5)	10000
Direct wage of laborer (2000 x 4)	8000
Manufacturing costs:	
Variable costs (2000 x 2)	4000
Expense for special equipment	1500
Total	23500
Differential income over differential cost	4500

Because the existing productive capability of that enterprise has a surplus, accepting that order will not increase the original fixed cost, therefore the fixed cost already belonging to the original products should not be included in the differential cost. The above calculation shows that under present conditions, accepting that special order can bring definite economic gain for the enterprise, therefore it is still worth it, otherwise, the surplus productive capability will be simply wasted.

If the operating decision is related to the expansion of investment in fixed assets or the increase or decrease of the long term source of capital, then it belongs to long term investment. Investment in fixed assets is large in amount and will have a continuous effect within a relatively long period. Therefore, the selection of investment plans in fixed assets is a key decision of the enterprise. Besides conscientiously considering the advanced nature of technology, emphasis should be placed on comparing the economic nature of the investment. The economic results are measured by comparing the percentage of return on investment. The formula for calculating the percentage of return on investment is as follows:

$$\text{Percentage of return on investment} = \frac{\text{Return on investment (or net income)}}{\text{Amount of investment}}$$

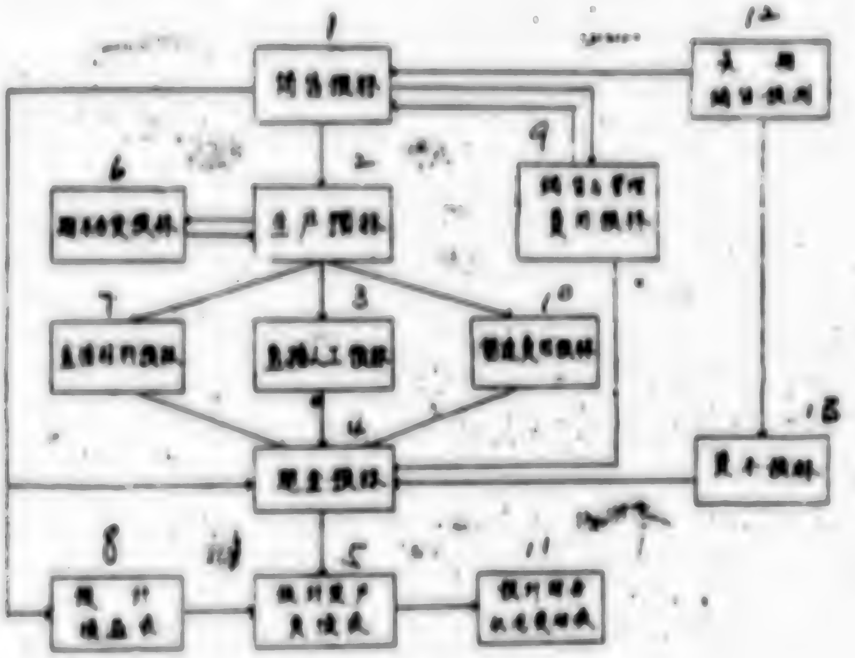
The time factor has important significance in long term investment. Correct calculation of the percentage of return on investment must take into consideration "the time value of currency." The amount of investment, the return on investment and the time factor must be considered at the same time to carry out a current value analysis of capital flow. This means, for different investment plans, the length of the investment period, the amounts of investments and the net cash flow of each year after the productive project has been built and has entered into production must be calculated in current values for comparison on the same unified base so that the optimum plan can be selected. The percentage of return on investment determined by analysis of the current value of capital flow contrasted with the "capital retrieval period" has an even larger comprehensiveness,[2] and this is the most effective measure for judging whether the economic results of investment are good or bad. It has already been widely used in practice.

The optimum plan determined by the above decision making procedure has established concrete goals for the productive and operational departments of the enterprise, but the economic results must be further realized and implemented in related long term and short term budgets. The goals to be realized by the productive and operational departments of an enterprise within a definite period are reflected systematically and centrally by relevant data from the budget. Therefore, the budget is the manifestation of operational decisions. Operational decisions must be implemented through the operational budget. In the capitalist economy, the overall budget for productive and operational activities of an enterprise is based on the study and forecast of market needs, the marketing and sales budget takes the lead, and the overall budget further includes production, costs, finances and cash income and expenditure. The relationship among them is illustrated in simple terms by the system diagram show on page 43.

The actual implementation of the budget will be further explained in the following section on responsibility budgets and responsibility accounting systems.

III. Utilize the mathematical methods provided by operations research to concretely grasp the objective patterns of the relationship and the variation of relevant variables

In modern management accounting, the widespread use of mathematical methods has its objective needs and conditions. As science and technology continue to progress, as productive operations become more complex, as the scale of enterprises continue to expand, to improve the level of management, to strive towards realization of the maximum economic results, the entirety of business management is developing more and more towards quantification. Accounting, in order to adapt to this great change in business management, has also been required to "arm" itself with mathematics so that it can develop towards quantification. Using mathematics to arm management accounting is mainly to allow some of the mathematical methods provided by operations research to be absorbed and to penetrate into accounting so that it can use simple, clear and precise mathematical models to express complex economic activities as much as possible, and utilize mathematical methods to process scientifically the various data it possesses so that the inner relationship of relevant objects and the optimum numerical relationships can be revealed for the purpose of grasping the objective patterns of the relationship and variation of relevant variables to provide an objective base for management to correctly carry out management decisions, select the optimum plan and effectively improve operation and management. For example, "regressive analysis" can be used to break down semi-variable costs and concretely grasp the dependent relationship between cost and yield, "linear optimization" can be used to determine the best combination of relevant factors, the principles of "the library theory" can be used to calculate "the economical number of orders" and "the economical amount of production," "input-output analysis principles" can be used to estimate the patterns of variation of relevant data having inner relationships, etc. All of these can help eliminate certain direct feelings and capriciousness in business management and decision making so that they can be established on the basis of scientific analysis and precise calculation of the objectives.



(Chart on page 43 in Chinese text)

1. Predetermined marketing and sales goal
2. Predetermined production goal
3. Predetermined direct labor
4. Predetermined cash
5. Estimated capital debt table
6. Estimated end of term inventory
7. Estimated direct materials
8. Estimated profit and loss table
9. Estimated marketing and management costs
10. Estimated manufacturing costs
11. Estimated financial status variation table
12. Long term marketing forecast
13. Estimated goal of capital

Quantification of a science in actuality signifies advancement of the science towards precision, maturity and perfection. As Marx said: "A branch of science can be said to have truly reached a state of perfection only when it has successfully utilized mathematics."[3] This is the common trend of development of each branch of science. The formation and development of modern management science have concretely proved this point in its own way.

IV. Use the principles of "behavioral science" to guide, establish and perfect the responsible accounting system

Behavioral science believes that the various behavior of human beings is the result of definite motives. These motives are formed by the desire to satisfy the internal and intensive demands. Behavioral scientists have called this desire "need."[4] These "needs" that demand satisfaction have prompted the various kinds of behavior. Applying this principle to business management, it is believed that the key to good business management is to carefully understand the various needs of the subordinates and to satisfy their needs in time, and skillfully combine their needs with the goals of the enterprise. For this, the past practice of simply relying on orders from top to bottom in organization, planning and control must be changed and replaced by widespread "participation" and "division of authority" (delegating authority and responsibility by the superior to the lower echelon and the individual), "democratic management" (emphasizing "autonomous management," implementing "self discipline") so that a type of working condition can be created as much as possible to realize a combination of the goal of the organization and the goal of the individual, making people realize that while exerting efforts to realize the goal of the organization, it is also possible to best realize one's own personal goal, realizing harmony and uniformity between the two. Now, the responsibility accounting system in management accounting has been established on this principle.

We mentioned previously that the goals which the productive and operational departments of an enterprise want to realize within a definite period are manifested by the overall operational budget. To assure its realization, it still needs to be further implemented and manifested. For this, the various departments of production and operation within the enterprise will have to be divided into several responsibility centers. The indicators in the operational budget have to be broken down according to the responsibility centers to form so-called responsibility budgets so that each responsibility center can have its own clear goal and task. The review, the organization and the implementation of responsibility budgets are carried out by responsibility accounting. The main characteristic of responsibility accounting is to combine accounting that measures the progress of work with the operational and managerial responsibility system and systematize and formalize responsibility accounting so that it becomes a routine and a tight control system within the enterprise. According to the different duties, the responsibility centers can generally be classified into three types, cost center, profit center and investment center. Correspondingly, responsibility accounting must also be organized around cost, profit and investment. The cost center only examines the costs under its control. The profit center not only examines cost, it also examines income and further compares the income and costs to examine the profit (profit determined by established methods). For internal units with relatively greater independence in production and operation, besides examining their costs, income and profit, they must be further examined as to the economic results of investment--percentage of return on capital.

The key to doing responsibility accounting well is to correctly establish the goals for each responsibility center, strengthen control over the execution of the goals and give rewards according to the size of achievements. This is because appropriate goals can become "inducements" of behavior and encourage people to exert efforts to reach the goal. If the goal is set too low, the potential cannot be fully exploited. If the goal is set too high and it is difficult to reach, people will lose confidence, and the "inducement" of behavior will be lost. The control of execution of the goal includes systematic record keeping of the progress of execution, comparison of the actual achievements with the estimated progress, timely analysis of the reason for any differences that have occurred, implementation of responsibility so that people can adjust their behavior accordingly and in time to promote realization of the preset goal. At the end of a definite period, it is necessary for "strengthening behavior" to write achievement reports for each responsibility center and to carry out overall analysis, evaluation of the achievements and give rewards according to the size of the achievements through the internal management reporting system of the enterprise. Because at each stage, confirmation and encouragement according to the achievements in work completed can satisfy the material and spiritual needs of the people at the appropriate time, and this will further excite and encourage people to continue to act towards the preset direction and to exert efforts to better complete the higher goal of the next stage. Exercising such encouragement at each continuous stage can effectively develop man's "capability resources" and enable the production and the operation of the enterprise to achieve greater and greater economic results. This is the fundamental reason why the responsibility accounting system can develop a greater and greater function in actual work.

Learn the Scientific Achievements of Modern Management Accounting to Serve Our Nation's Buildup of Socialist Modernization

At present, our nation's socialist enterprises are technically backward and backward in management when compared to the enterprises of developed capitalist nations. We must not only learn and introduce into our nation the advanced technology of capitalist nations, we must also learn their method of scientific management, widely acquire other people's skills for our use.

In our nation's socialist economy, the level of accounting work is low and people do not take it seriously. This situation exists commonly. For a long time, the main reason why the situation was unable to change was that serious shortcomings existed in the economic management system mainly manifested in the following: Power was overly centralized, administrative methods were used to manage the economy, necessary autonomy of the enterprises was not given, the production of commercial products and the price patterns were neglected, "eating from the big pot," good management and poor management of enterprises were not directly linked to the existance, development and the economic benefits of the workers. Under this situation, accounting was necessarily neglected, and actually it did not have much use. To promote the high speed development of our nation's socialist economy, we are presently carrying out reform of the economic management system. New economic management systems must use economic methods to manage the economy, implement a combination of planned regulation and market regulation. Under the guidance of the national plans, the autonomy of enterprises must be expanded, and at the same time, the economic responsibility of the enterprises must be increased, superiority must be developed thoroughly, competition must be protected, the policy of joint ventures must be promoted so that the enterprises can have an economic mechanism combining internal economic drive and external economic pressure. As the economic management system is reformed, the production and operation of enterprises have manifested a vitality unseen before, and improvement of the standard of management has become an urgent need. This situation has presented new demands upon strengthening accounting work on the one hand and at the same time, it has created favorable conditions for the reform and improvement of accounting.

It is very beneficial to adapt to the new situation of reforming the economic management system, to greatly advance our nation's accounting work on the original foundation, and while conscientiously summarizing the experience of our nation's accounting work, we must profoundly study foreign management accounting, to learn and digest those parts that conform to scientific principles, to reform and improve them so that they can be adapted to the demands of building our nation's socialist modernization to serve in hastening the construction of our nation's socialist modernization.

I. Under the new situation, enterprises must place correct operational decision making at the forefront, because this is related to the problem of the rise and fall of enterprises. In the past, the nation has controlled the supply, production, marketing activities of enterprises very tightly, the enterprises are accustomed to act according to orders from above, thus, so-called correctly carrying out operational decision making was unnecessary and impossible. Under the new situation, enterprises, in order to correctly utilize the autonomy in production and operation, must comprehensively consider the subjective and objective factors inside and outside the enterprise, and all plans that may be carried out in production and operation must first be subjected to overall analysis and evaluation to develop the advantages and avoid the shortcomings and select the optimum plan. In this regard, the methods and principles of analysis and evaluation of operational decisions in modern management accounting can mostly be found in references and borrowed. At present, some of our nation's industrial enterprises do not have sufficient productive tasks, the equipment remains unused, and people do things superficially, the phenomenon is relatively serious. Under this situation, it is very meaningful, whether from the point of view of the enterprises or of the national economy, to consider how to open up channels for production, to find outlets for surplus productivity. Operational decision making must pay special attention to problems in this regard. Obviously, the principles of differential cost analysis in modern management accounting are meaningful as direct guidelines. Also, for example, in the situation where production and marketing can be directly linked, and the nation allows certain products to be sold at floating prices within a definite range, at what level should prices be set so that the competitive ability can be improved and the enterprises can obtain the maximum economic results should also be conscientiously studied. In long term decision making in the past, many enterprises followed the whims of higher officials regarding investment of fixed assets, conducted analysis and study that neglected the economic results of investment, thus wastefulness and accumulation were very serious. They even mistakenly believed "the time value of currency" is the product of the system of exploitation of capitalism and it is not compatible with the socialist economy, therefore the many categories related to "the time value of currency" such as welfare, annual funds, current value, etc. were not allowed to be used and were not allowed to be studied. Thus, the economic results of long term investments could not be correctly evaluated. Now, we should reinstate "the time value of currency" to establish analysis and comparison of economic results of long term investments on a scientific basis.

II. In the management of planning, the content of the overall budget for production and operation described in modern management accounting is basically consistent with the "productive, technical and financial plan" long used by our nation's industries and enterprises. But because we always established sales according to production in the past, the enterprises need only grasp production and did not directly consider the needs of the market, therefore in the planning system, production plans were placed at the forefront. The overall budget of production and operation of capitalist enterprises is based on surveys and forecasts of market needs, and marketing and sales estimated take the lead. They also place special emphasis on the expected effects of productive and operational activities upon the cash income and expenditure and financial situation of the enterprise. This has an important meaning in correctly planning and utilizing capital, in assuring the enterprises have a good financial status and loan repayment ability. As we carry out a combination of planned regulation and market regulation based on the market and guided by plans, industries and enterprises must also change the practice of setting sales according to production to the practice of setting production according to sales. Under this situation, the procedure of drawing up overall production and operating plans of the enterprises can follow the ways of foreign nations, using the surveys and studies of market demands and scientific forecasting as the foundation, taking marketing and sales plans as the center to carry out the comprehensive balance among the various planned indicators. Here, the critical point of profit and loss and the principles of analysis of the mutual relationship among cost-amount of production-profit in modern management accounting can be used to combine the subjective and objective conditions inside and outside the enterprise and to make economical and rational selection of the composition of the varieties of products and the scale of production so that management accounting can become a powerful tool to dig deeply for potential, increase production and conservation, increase income and conserve expenses. In utilizing the relationships among cost-amount of production-profit that follow a regular pattern, we can draw up flexible plans according to the many foreseeable activity levels. Contrasting flexible plans and fixed plans will facilitate implementation of the tasks and division of responsibility even more and will enable us to evaluate and examine the progress of execution of the plans on an even more objective and comparable basis. In the planning system, cash income and expenditure and financial estimates must be prominent. After the enterprises bear their own profit and loss and manage their own finances, cash income and expenditure and financial estimates should not be neglected, because they will greatly help strengthen the planning and transfer of capital.

III. In capital management, our nation's industries and enterprises established quotas for capital flow in stages, assigned floating capital to its proper place, practiced management at different levels, and for a long time, the gains were not large. On the one hand, it was because the materials supply system could not in a versatile mannger adapt to the actual needs of production and operation of the enterprises, and at the same time, it was because of uncompensated use of capital and low interest rates on bank loans, the enterprises could use more materials and capital and in the economy, not much pressure would be felt. The enterprises will pay more attention to the results of capital utilization if hindrances in the system are eliminated, and at the same time, if the state more fully utilizes interest as an economic level to affect production and operation of the enterprises. Under this situation, learning the relevant content of modern management accounting, profoundly studying the quantitative relationship between inventory and supply and between production and marketing, applying scientific methods to determine the economical amount of orders, the interval of economical orders and the economical amount of production to supplement the deficiencies in our nation's current method of calculating the quotas of floating capital will all greatly help to improve production and operation and strengthen capital management.

IV. Responsibility accounting in modern management accounting is similar to internal economic accounting practiced for many years by factories of our nation's enterprises. This has been combined with the present reform of the economic management system. The authority, responsibility and benefits have been combined in the internal economic accounting of factories of many of our nation's enterprises, and there is new development, and many new forms have emerged (such as the use of internal currency within the plants or internal checks), and good results have been obtained. We must treasure our own precious experience and further summarize and improve it. In this regard, the application of the principles of "behavioral science" by modern management accounting in responsibility accounting can be learned. We have always emphasized mobilizing man's enthusiasm. But in business management, the bureaucratism of some leaders is still very serious, preventing the socialist enthusiasm of the broad masses from fully developing. If we also apply some of the general principles of "behavior science" in economic accounting in factories, we may add new life to it, like adding flowers to the brocade, making the perfect even more perfect.

V. The application of mathematical methods is still a weak link in our nation's economic work. This is related to the long period of emphasis on the study of so-called "quality" and the neglect of analysis by our nation's economics circle. There is a widespread popular saying that emphasizing quantitative analysis will lead to "mathematical formalism," this is an important characteristic of popular economics of the capitalist class while Marxist economics emphasizes only the study of some economic categories and rules. This is a seemingly true but false statement that leads the lively economic science into a death trap. Not conscientiously studying the quantitative aspects of economic problems, not concretely recognizing and grasping the quantitative manifestations of objective things, the quantitative changes, the complex quantitative relationships and the optimum quantitative limits under definite conditions have already caused extremely harmful effects on our nation's economic management work. In the realm of accounting, it is the same situation. Stones from other hills may serve to polish the jade of this one. Conscientiously learning and borrowing from this important aspect of modern management accounting will undoubtedly be of great help to the further improvement of the standard of our nation's accounting work so that it can better suit the needs of building socialist modernization.

FOOTNOTES

1. What is commonly called "operations research" generally includes such specialized fields as "mathematical planning," "queuing theory," "library theory," "decision theory," "production planning and control," "quality control," "network analysis," "simulation," "managerial information system," "interdepartmental communications," and "mathematical models of balanced economy."

2. The length of the construction period, the amount of capital invested during the construction period and such factors do not affect the indicator of the "investment retrieval period" calculated on the yearly basis. Therefore using it to differentiate the economic results of different investment plans can only approximately explain the problem and it is extremely limited.

3. B. Lafage: "Remembering Marx." Published in "Remembering Marx and Engels." People's Press, 1973, p 7.

4. Famous behaviorist A. Masluo classified man's many "needs" into five categories and arranged them according to their importance and order of occurrence into basic levels of human needs called the "need levels," in the following order: 1. physiological needs; 2. safety needs; 3. social needs; 4. psychological needs; 5. self fulfillment (personal success) needs. See "American Business Management" by He Ming et al, Sanlian Book Store, 1979, p 28.

9296
CSO: 4006/335

MAJOR DIRECTIONS FOR EARTH SCIENCE RESEARCH PROPOSED

Beijing RENMIN RIBAO in Chinese 19 May 81 p 4

[Article: "Earth Science Research Should Emphasize Energy Resources, Natural Resources, Natural Disasters, Environmental Protection and Engineering"]

[Text] China already has a vast team in earth science research and has made outstanding research achievements. The mission of today is to actively take up important general topics in national economy and defense to contribute to the four modernizations. Director of the Earth Science Division of the Chinese Academy of Sciences, Yin Zanxun [1438 6363 8113], stressed this view in his work report to the Fourth Conference of Division Committees in the Chinese Academy of Sciences.

According to Yin, Chinese scientists have already made many outstanding achievements in earth science research, including creative theories and methods developed by Chinese scholars. The development in earth science has reached a new stage in recent years. The character and trend of the new status are the involvement of new technology, mathematics, physics and chemistry, the computerization, the multidisciplinary nature and the enhanced international collaboration. Earth science began as a descriptive science and advanced to an experimental science of precision observation and experimentation and quantitative numerical simulation. Therefore, researchers in earth science should adapt to these new characteristics, keep up with the trend of development and work on important technical topics.

In order to meet the needs of socialist modernization construction, said Yin, the emphasis of earth science research should be placed on five areas: energy resources, natural resources, natural disaster, environmental protection and engineering. The main objective is to propose theoretical understanding by revealing the laws of nature and to provide theoretical foundation and method for prediction evaluation, control and utilization in the field of earth science.

Yin said that, in promoting the development of earth science, we should perfect the division organization, strengthen the academic leadership, improve the experimental methods, actively adopt new technologies, while at the same time reinforce the team of scientific research. For middle-aged science and technology workers currently on the front line of research, their responsibilities should be increased so that they can fully develop their key role. Young talents in science and technology should be carefully cultivated to juvenate the research team.

For the near future Yin believes that the following research work should be emphasized: study of the earth crust diman [0966 1611], general oceanographic investigation, research on earth crust energy resources and geothermal energy, the formation environment and mechanism of mineral deposit, study of the origin and evolution of material, fundamental research on China's natural potential of agriculture resources and farmland ecology, atmospheric physics and dynamics, environmental pollution, engineering geology and the prevention of rock and mud flow.

9698
CSO: 5000/4073

METALLURGY INDUSTRY ASKED TO MAKE CONCESSIONS, BUILD STRONG FOUNDATION

Jinan DAZHONG RIBAO in Chinese 1 Apr 81 p 1

[Article: "The Metallurgical Industry Must Make Concessions, Provide Good Service and Build a Good Foundation"]

[Text] The Provincial Metallurgical Industry Department recently convened a province-wide metallurgical work conference at which it conscientiously implemented the spirit of the work conferences of the Central Committee and of the Provincial Party Committee, calling upon the broad masses of cadres, workers and staff on the metallurgical front to speedily bring the point of emphasis in their work into line with the concept of making concessions, providing good service and building a good foundation. The comrades attending the meeting resolved to carry out the readjustment in a down-to-earth manner and actively serve the light and textile industries and the development of the national economy.

During the meeting, in keeping with the requirements of the major policy of carrying out a further economic readjustment and realizing greater political stability, the comrades attending got a good grasp of the actual situation and came up with a retrospective summary of the development of the metallurgical industry in our province and the lessons we have learned. Everyone felt that production and construction in our province's metallurgical industry have made great strides in the last 20-some years. However, due to the "leftist" influence existing in economic work over a long period of time, production and construction in the metallurgical industry have been accompanied by a great many problems.

The meeting emphatically pointed out that if we want to do a conscientious job of readjustment in the metallurgical industry, then we must adopt the ten characters in the phrase "make concessions, provide good service and build a good foundation" as the general guiding ideology for the metallurgical industry. Our concrete tasks for this year are: continue to reduce the number of construction projects, reduce capital construction investment by 86.8 percent, and be firm about reducing those projects that should be cut back; take active, appropriate and resolute measures and take the whole situation from a basis of the benefit account, in a shutting down or shifting into other lines of production those enterprises which have a high rate of consumption, operate at great losses, lack supplies of raw materials, or which have no markets for their products; energetically expand new techniques for conserving energy, get a firm hold on the conservation of energy resources, and demand total energy savings, in terms of standard coal, of between 100,000 and 120,000; continue to increase production of items in short supply, improve quality, increase the variety of products, make up deficits and increase surpluses. This year, with iron and steel production being somewhat reduced from last year's, we must strive to accomplish a situation in which, fundamentally, though our production decreases, our income does not, and the cost of comparable products is 2 percent lower than last year's; do everything we possibly can to make concessions on behalf of the development of the light and textile industries, provide good service, and embark upon a new road of high quality, much product variety, low consumption of raw materials, and high benefits. At the same time, we must do a good job of readjusting the proportionate relationships within the metallurgical industry, and do a good job of developing the potential of, renovating, and remaking existing enterprises.

The meeting felt that the most fundamental measure for realizing the general guiding ideology of "making concessions, providing good service, and building a good foundation" is using the party's line, programs, and policies since the Third Plenum to unify the thinking of all levels of cadres, workers, and staff, and heighten our awareness of the need to do a good job of readjustment. We must continue to step up the work of reorganizing enterprises; positively and systematically, promoting total quality control, overall management of energy resources, overall economic accounting, and doing a good job of the democratic management of enterprises. We must concentrate energetically on the work of standardized training for all workers and staff, so that employee education becomes an important pathway for developing people's intellects and cultivating human talent. In particular, regarding enterprises that have been shut down and shifted into other areas of production, leading cadres of the party and government must shift their main energies, that in the past were devoted to production, onto the training of all personnel, turning the factories and mines into schools and changing the production of commodities into the production of talent. We must make great efforts to enliven enterprise management and, for enterprises whose production task has not been sufficient, we must continue to broaden avenues of production and paths leading to greater productivity; actively "get more rice to throw into the pot"; and do our utmost to ensure that enterprises do not operate at a loss.

The meeting requested metallurgical industrial enterprises throughout the province, in the course of readjustment, to further improve and augment party leadership, step up ideological political work, and place persevering in the four basic principles in the foremost position in ideological political work. Among staff members and workers, and especially among young workers, we must combine the activity of launching a profound movement of "learning from Lei Feng, and establishing new ways" with launching activities to develop civility and courtesy having the "five things to be stressed" and the "four beautifuls" as their main content, and combine these with launching, profoundly and on a broad scale, a socialist labor competition. We must further step up the party's basic-level construction, bring into full play the battle-stronghold effect of the party branches and the vanguard exemplary effect of party members, lead the broad masses, pluck up our revolutionary spirits and, in a down-to-earth way, guarantee the completion of this year's readjustment and production task for our province's metallurgical industry.

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BRIEFS

SHANDONG METALLURGICAL INDUSTRY READJUSTS--Shandong's metallurgical industry is earnestly implementing the policy to readjust the national economy by correcting the orientation of its services, readjusting the composition of its products, and actively increasing production of those items urgently needed by agriculture and the light and textile industries. From January to April of this year, the output of such urgently needed items as small shaped steel, sheet metal, and band steel was 37.7 percent higher than during the same period last year. In addition, several new steel products were successfully produced, such as zinc-plated sheet steel, medium-sized grooved steel, No 16 manganese 32mm diameter round steel, and flat spring steel. [Excerpt] [Jinan DAZHONG RIBAO in Chinese 27 May 81 p 1]

CSO: 4006/366

NEW SPECIAL ECONOMIC CENTER, SHENZHEN CITY, DESCRIBED

Beijing DILI ZHISHI in Chinese No 1,1981 pp 4-6

[Article by CAI Renqun [5591 0086 5028]: "China's Newly Risen Special Economic Center-- Shenzhen City"]

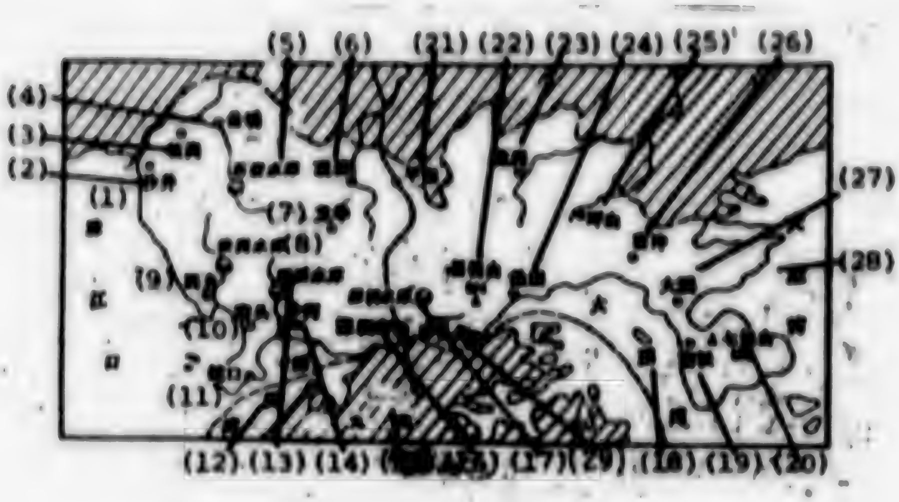
[Text] As the train leaves Guangzhou and heads southeast along the Guangshen Line, just as we pass east of the Pearl River delta we can see the boundless Daohai can sugar fields. Following that, we pass through banana farms that are fragrant throughout the four seasons, and, in about two hours, we reach the major South China import-export port, the newly risen special economic center -- Shenzhen City.

1. An Ideal Foreign Trade Base

Shenzhen City was originally Baoan County. Over one year ago, it was decided on a directive of the Party Central Committee to establish special economic zones at Shenzhen, Zhuhai, Shantou and Xiamen [Amoy] in Guangdong Province for the purpose of accelerating the establishment of the Four Modernizations in our nation. Because of its excellent geographical location, Shenzhen is comparatively convenient for foreign contacts and has naturally become the focal point in the establishment of the four special economic zones.

Shenzhen City is located on the eastern bank of the mouth of the Pearl River at a distance of about 150 kilometers north of Kuangzhou. It is very close to Hong Kong and Kowloon. One can reach the Kowloon New Territories simply by crossing the Luohu Bridge, which is less than 30 meters in length, over the Shenzhen River after having passed through Shenzhen Station. There is now a railroad and a highway linking them and it is about 40 kilometers from Kowloon Station.It is a trip of less than 20 nautical miles from the Shekou waterway to the Hong Kong center, a trip that takes a half hour by hydrofoil. The geographical proximity of Shenzhen and Hong Kong makes economic relations betwee them extremely close. Traditional border trade is carried out between them directly. Everyday large quantities of fresh vegetables, fruits, aquatic products and other non-staple foodstuffs flow into Hong Kong for sale in a steady stream. The water used by the Hong Kong population of 5 million is also supplied from the Dongjiang-Shenzhen Diversion Works and the Shenzhen Reservoir. Such construction materials as sand and rock, which Hong Kong requires in large quantities, are obtained for the most part from Shenzhen.

Map of the Shenzhen City Area



Key:

1. Mouth of Pearl River
2. Shajing
3. Songgang
4. Gongming
5. Shiyan Reservoir
6. Guanlan
7. Longhua
8. Tiegang Reservoir
9. Xixiang
10. Nantou
11. Shekou
12. Shenzhen Bay
13. Xuli Reservoir
14. Shahe
15. Kowloon
16. Shenzhen City
17. Shenzhen Reservoir
18. Dapeng Bay
19. Nanwo
20. Qiniangshan
21. Pinghu
22. Wutongshan
23. Longgang
24. Yantian
25. Pingshan
26. Kuichong
27. Dapeng
28. Daya Bay
29. Shatoujiao

The excellent natural conditions of Shenzhen City are extremely advantageous for building a foreign trade export base for both industry and agriculture. Shenzhen meets all of the requirements for developing export processing industries, including land for industrial use, an electric supply, water supply and communications and transport. On both sides of the close to 30 kilometer highway from Shenzhen Zhen going westwards toward Shahe and from Nantou to Shekou, there are gentle sloping hills with an area of scores of square kilometers that have a good geological foundation with soil under high pressure so that a factory or a storied building can be built without having to drive piles. In addition, very little farmland has to be taken over. There is a land link here with the New Territories of Hong Kong so that communications and transportation are extremely convenient. Thus, it is the most ideal place to build an export industry center. The Tiegang Reservoir, Xili Reservoir, the Shenzhen Reservoir and the Dongjiang-Shenzhen Diversion Works can provide a steady supply of water for industry and daily life. In addition to the Pearl River electric supply network, some electric power can also be brought in from Hong Kong so that requirements for production and illumination can be completely met. In developing processing industries at Shenzhen, the advantages of Hong Kong and the interior areas of Guangdong can be linked. This is something that no other economic zone can match and is naturally very attractive in view of the density and high cost of land in Hong Kong.

Conditions for developing agricultural by-products for export in the outskirts of Shenzhen are also ideal. The area is located in the southern subtropical zone. The climate is warm and the average annual rainfall is over 1900 millimeters so that agricultural crops can be grown all year. There are 550,000 mu of arable land in the city as a whole of which 420,000 mu are paddy fields. There are 850,000 mu of mountain forests. Thus, there is a comparatively good basis for agricultural production. Stable yields have already been ensured despite drought or heavy rain for 85% of the paddy fields and electrically operated irrigation and drainage networks have been established. Every year the area supplies over 40 million jin of commodity grain and large quantities of peanuts, sugarcane, fruits and other secondary export agricultural products to the state.

The topography of Shenzhen is complex and varied. There are mountains, rivers, hills and plains. In general, the terrain slopes from the northeast toward the southwest. The tail of the Lianhua Mountain range, including Wutong Shan and Qiniang Shan, extends in an unbroken chain to the eastern boundary of the city. The highest peak is 944 meters. There are abundant forests on the mountains and there are wide expanses of grassy slopes that are suited to development of forestry and animal husbandry. In the central area on both sides of the Guangzhou-Shenzhen Railway there are many gently sloping hills of 200 to 300 meters above sea level. The soil layer is comparatively deep and there is a good vegetation cover so that it is very well suited to the growth of such fruit trees as lichee, pineapple, persimmon and sand pears. Fertile coastal plains extend along the mouth of the Pearl River on the west. They serve as the granary for the city.

Shenzhen City is close to the sea on two sides, with a coastline of up to 195 kilometers. The precipitous mountain ridges of the southeast coast run vertically down to the edge of the southeast coast to form the extremely tortuous Dapeng and Daya bays, which are deep water coastal areas of which there are few in South China.

Within the bays, there are islands scattered like stars in the sky or men on a chessboard forming a natural protective screen. The granite and qartz sea sand of which the coast is densely composed are excellent building materials of which large quantities are sent every year to Hong Kong.

Except for the area in the vicinity of Shekouchi Bay, the coast along the mouth of the Pearl River and Shenzhen Bay in the southwest consists mostly of argillaceous material. This is distributed over an area of 50 to 60,000 mu of shallow sea shoals making it suited to enclosed tideland for cultivation or for the development of marine aquaculture. The zone of shallow shoal at the mouth of the Maozhou River contains fertile water, moderate amounts of salt mud and abundant plankton. It is area where the famous Shajing oysters are produced.

2. A New Type of Special Economic Center

Special economic centers make use of special economic policies and management methods and various types of preferential conditions to encourage foreign businessmen (including businessmen from foreign countries, overseas Chinese businessmen and Hong Kong and Macao businessmen) to invest in to engage in joint investment and management with us of export processing industries, real estate industries, tourist industries and other economic enterprises in the special centers. For example, raw materials, building materials, mechanical equipment and necessities of daily life for the residents required in the special centers may be imported duty-free. Some of the enterprises being established in the Shenzhen City Special Economic Center are managed solely by foreign businessmen, while some are joint ventures of Chinese and foreigners. At present, processing and assembling of materials is also welcome. In summary, various modes of cooperation in international trade are being attempted at Shenzhen on a trial basis, with preliminary successes already having been achieved. In the future, however, the modes of cooperation with foreign business in the Shenzhen Special Economic Center will gradually come to consist primarily of joint ventures between Chinese and foreign businessmen or of businesses managed independently by foreign businessmen.

On the basis of the overall plan for the establishment of the Shenzhen Special Economic Center, it was initially determined that the sphere of the special center would begin in the east in the vicinity of Meisha at the edge of Dapeng Bay and that it would extend westwards to the Shekou Industrial Region on the banks of Shenzhen Bay (See the attached map). The area is about 327 square miles. In 1979, the total population of the special center was 70,000 people, of which 40,000 people were not engaged in agriculture. Outside of the Shenzhen City area, there are still the two industrial regions of Shekou and Shahe as well as the Meisha Tourist Region to be built in the special center.

In August of last year, ground was broken and work was begun on large-scale basis engineering construction in the Shekou Industrial Region, the responsibility for the development of which lies with the China Merchants Steamship Company, which is an organ of our nation's Ministry of Communications in Hong Kong. At present, the first stage has already been completed in the key link for the industrial region, a 600 meter parallel-to-shore type wharf which is planned to be built on

Shenzhen Bay. One-hundred-fifty meters of the wharf has already been put into use, a channel into the harbor of 3400 meters in length has been dug out and 3000 ton class freighters and barges can enter the harbor and dock. In the future, the building materials, raw materials and mechanical equipment required in the Shekou Industrial Region will be shipped in by sea and products can be exported in this way to Hong Kong. A highway is to be built from Shekou to Nantou that will link up with the Guangzhou-Shenzhen highway and which will be opened to traffic. The water supply project from the Xili Reservoir to Shekou and the high-voltage electric power lines from Shenzhen to Shekou have already begun to supply water and electicity. A modern microwave communications station will soon be completed as scheduled and made available for use so that so that the Shekou Industrial Region will be able to have direct telephone and other forms of communication with Hong Kong and various areas of the world. It is predicted that after the "five opening-up and one leveling" projects (opening up shipping, opening up highways, putting through electricity, putting through water, putting through telecommunications and leveling ground) have been completed at the end of this year the Shekou Industrial region will be provided with the conditions for providing construction sites for foreign business.

According to the plan, the Shekou Indistrial region is to be divided into a heavy industry region, a chemical industry region and a light industry region. More than 700 foreign businessmen from 15 countries and regions as well as overseas Chinese businessmen and businessmen from Hong Kong and Macao have come one after the other to discuss investment arrangements. At present, agreements have been reached on 13 items, including a dismantled ship steel rolling mill, a container plant, an aluminum rolling plant, an engineering machinery recinditioning plant, an oxygen acetylene plant, a ship's paint plant, a cleansing agent plant, a yacht plant and a flour mill.

Five factories have already gone into partial operation in the Shahe Industrial Region, which is under the management of the Guangdong Overseas Chinese Industrial Company. These include the Guangming Electronics Plant, which has comparatively modern equipment and which manufactures dual-purpose recorders, electronic wrist watches and electronic calculators and a furniture plant which produces high quality iron and wooden furniture. In just a few years, an industrial town with a population of several tens of thousands of people will be established here.

In the Shangbu Industrial Region, which is only 3 kilometers from old Shenzhen Town, construction is being stepped up on many imported items. The automobile assembly plant, in which Ford U.S.A. and the Xiaba Group, which is the Hong Kong agent of the Mitsubishi Corporation, have invested is capable of assembling large and small touring cars with attractive, novel designs and with fine and comfortable appointments. This plant has already gone partially into production. Construction has already been completed of an elegant colored printing facility and printed products plant. In the Shangbu Industrial Region, electronics, metals, electrical appliances, clothing, wool fabrics, toys, plastics and artificial leather goods plants will be built thr[illegible] investments by a group of foreign businessmen. The original clothing, handicraft and radio plants in Shenzhen City have also made full utilization of the favorable conditions in neighboring Hong Kong to engage in processing and assembly work, with good economic results having been obtained. Not only have large quantities of foreign exchange been created for the state but the income of the residents has also been markedly increased.

The town of Shatoujiao on Dapeng Bay has for historical reasons been connected with the market regions of Hong Kong and the Kowloon New Territories. For this reason, on the basis of its special geographical environment and historical conditions, a special center within thedeveloping special center has been organized and materials processing industries, tourist residence and foreign exchange businesses and secondary agricultural product export industries have been set up.

3. An Exquisite Tourist City

In order to meet the needs of development of the economic special center, building in the city of Shenzhen is being stepped up. Old Shenzhen before the Liberation was a small town with a population of less than 10,000 persons on the Guangzhou-Kowloon railroad line. After the Liberation, Shenzhen became one of our nation's major import-export ports. In 1953, the county seat of Baoan was moved from Nantou to Shenzhen. Many of our international friends who come to China to visit, go sightseeing, travel and study, returning overseas Chinese and compatriots from Hong Kong and Macao enter the country through the port of Shenzhen. The busy Shenzhen railroad station must handle close to 10,000 travelers every day, with 40 to 50,000 people crossing the border every day at peak times. Long-distance trains can go to Xiantou, Guangzhou, Xingning, Huizhou and various market towns and agricultural villages under the jurisdiction of neighboring counties and cities. This facilitates circulation of foreign exchange. There is an endless strean of buses and taxis on the roads and everything is bustling.

There have been great changes in the appearance of Shenzhen City in recent years. Building in the city has become even more active especially since last year. Everywhere rows on rows of scaffolding can be seen and vehicles loaded with building materials shuttle back and forth. In order to meet the demands of the ever increasing foreign economic activity and of the rapid development of the tourist industry, construction has been started on the 22-story Shenzhen Guesthouse, the well-appointed Shuiku [Reservoir] Guesthouse, the Zhuyuan Guesthouse and numerous restaurants, friendship stores, a science and technology building and a commercial building.

Because of the rapid increase in population, construction work has been stepped up on freshly designed, fully appointed and attractive workers dormitories covering an area of hundreds of thousands of square meters. In the vicinity of the Reservoir Scenic Area, a garden villa residence area has been built to meet the needs of overseas Chinese and of our compatriots from Hong Kong and Macao for residences and temporary quarters when they return to this country.

Shenzhen City of the future will be not only an industrially developed city but will also be a beautiful tourist resort.

Shenzhen Reservoir, which is situated 3 kilometers to the northeast of the city special center, is at present the most important scenic area. There is an artificial lake with an area of more than 4 square kilometers and with rippling blue waves and clear water. There are splendid towers and pavilions reflecting the radiance and beauty of the lake and hills, giving everything an especially magnificent appearance. More than 60,000 visitors from foreign countries and from Hong Kong and Macao were received last year. At present, the entire Reservoir Scenic Area is being expanded. Once work has been completed on the Arts Hall, the Miniature Tree and Rockery Hall, the Aviary, the Special Industrial Products Hall and the large recreation site, even more tourists will come to stay.

The shores of Dapeng Bay, which extend for several tens of kilometers, will attract thousands upon thousands of travelers from afar because of its surpassingly beautiful and varied scenery. A lofty chain of mountains of 600 or 700 meters above sea level plunge down to the coast. The forests on the mountains are verdent and moist, there are murmuring mountain springs that have never ceased to flow for many years, beaches shaped like new moons are spread with loose, fine sand, there is blue sea water to clear that one can see to the bottom, sails of fishing boats can be seen in the distance and flocks of seagulls fly about in the blue sky, making a magnificent picture scroll. A coastal resort city with modern facilities is now to be built on the Xiaomeisha beach, which is 30 kilometers from the Shenzhen City Center. It will include a bathing beach, a sea-going pleasure boat area, a children's recreation area, a horse-racing track, a golf course and a theater as entertainment and sports facilities and recreational facilities as well as luxurious guest villas. The guests will be able to choose what they like best for their full amusement.

In addition, a series of sight-seeing spots such as the Nantou Lichee Park, the Kungming Yulu Hot Springs, the Xili Reservoir, the Tiegang Reservoir, the Pijia Mountain Park and the Lienhua Mountain Forest Park will also make Shenzhen City even more attractive.

4. Agriculture in the City's Outskirts That is Looking Toward Exports

Agriculture in the outskirts of the city will also have its own special characteristics within the special economic center that has been established in Shenzhen City. Not only will it provide the residents of and tourists in Shenzhen City with large quantities of vegetables, fruits, meats, the three types of fowl (chickens, ducks and geese), egg products, milk, aquatic procucts and other non-staple foods but a modern agricultural commodities export base will also be built with an eye to the Hong Kong and Macao markets.

There has been a comparatively good foundation for the fruit growing industry in the outskirts of Shenzhen City. There are at present 100,000 mu of orchards producing such fruits as lichee, persimmons, sand pears, pineapples, oranges, sweet peaches and watermellons. The orchards are distributed among the Longhua, Guanlan, Pinghu, Buji, Nantou, Fucheng and Shiyan communes which are located along both sides of the Guangzhou Shenzhen Railway. The sweet peaches of Nanshan, the sand pears of Dalang, the watermellons of Yanchuan, the pineapples of Luotian and the oranges of Jingui are famous near and far. After the Liberation, there were further advances in fruit production, with a maximum annual volume of production of 250,000 dan and with large amounts being exported to Hong Kong. However, during the ten-year period of upheaval, there was a sharp reduction in fruit production, with many traditionally famous fruits ceasing to exist except in name. At present, positive measures are being taken on the one hand to restore the original orchards and on the other hand to develop new orchards and to bring in superior varieties in order to meet the needs of export.

The Hong Kong markets have a daily need for large amounts of vegetables. In response, several tens of thousands of mu of good land have been set aside in regions of Shenzhen that are close to the border and with which there is convenient transport and a modernized vegetable base with spray irrigation facilities has been established in order to facilitate nearby export of fresh vegetables.

Aquatic products are traditional export foodstuffs of Shenzhen City. Here, there are fishing grounds bordering on the vast South China Sea and near the mouth of the Pearl River, where there are such fishing ports as Shekou, Yantian and Nanwo. In 1977, the volume of the oceanic catch was over 310,000 dan. The famous Shajing oysters (also called muli [Ostrea sp.]) have a fresh, tasty meat and have a very high cultivation value. They can be eaten fresh and can also be processed with oyster beans and oyster sauce. This is a choice seafood that is highly welcome in the markets of Hong Kong and Macao. In 1977, the total area of oyster beds in the city was 50,000 mu, with more than 64,000 dan of fresh oysters being produced for which more than one million dollars U.S. in foreign exchange was obtained.

Another unique characteristic of agricultural development in the outskirts of Shenzhen City is that it brings in foreign capital. This has led to expansion of aqualculture and animal husbandry enterprises. In order to supply fresh pond fish to the nearby Hong Kong market, preparations are being made to dig out over 10,000 mu of fish ponds. Together with the original fish ponds, the total annual production of the fish ponds will be able to reach over 10,000 tons, which is equivalent to one-fourth to one-third the demand of the Hong Kong market. Foreign businessmen have also invested in joint ventures with us in chicken farms, pig farms, beef cattle farms and milk cow farms.

In the not too distant future a modernized foreign trade base combining industry and agriculture, a new type of special economic center, a tourist area that will attract visitors from Hong Kong and Macao and a new socialist Shenzhen will appear on the land of our nation.

10019
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HUBEI HALTS AUTOMOBILE PURCHASES

Wuhan HUBEI RIBAO in Chinese 26 Mar 81 p 1

[Article: "Acquisition of Small Automobiles Temporarily Halted Throughout the Province"]

[Text] Our province has temporarily halted the acquisition of small motor vehicles. This was pointed out in the "Report on Ceasing the Purchase of Small Motor Vehicles" recently issued by the provincial people's government.

The report said that over the past few years the acquisition of small motor vehicles by organizations, enterprises, and institutions in our province has unceasingly increased. Since September of last year alone, in the space of less than half a year, the total number of limousines, jeeps, station wagons, and work vehicles acquired was over 1,680. This was not good for implementing the readjustment of the economy, realizing a financial balance of income and expenditure, stabilizing the prices of commodities, economizing on energy resources, or for changing our ways and forming closer ties with the masses. The provincial government decided to immediately set about implementing a comparatively broad rectification, demanding that it be completed by the end of June.

During the period of rectification regarding small motor vehicles, the report strictly prohibits the purchase of new cars, according to the following regulations:

Beginning with the day this report was issued, organizations, enterprises, and institutions throughout the province are uniformly and strictly prohibited from acquiring small motor vehicles (including limousines, jeeps, station wagons, and work vehicles). Even for small motor vehicles allotted by the planning committee or supplied in the past by the goods and materials department for which the transaction has not yet been completed or for which the approval is in the process of being handled, the transaction must immediately be terminated.

All levels of goods and materials departments and other departments, before the provincial people's government makes a new regulation, are not allowed to purchase vehicles in other parts of the country (or from abroad); those which have already been acquired from outside may not be marketed within the province.

All offices controlling purchases by social organisations must immediately, and for all units, halt approval proceedings on applications for the purchase of small motor vehicles.

All small motor vehicles obtained in a way not in accordance with every point in the above demands will not have funds allocated for it by the finance department, will not be paid for by the banks, will not be supplied with gasoline by the commercial department, and will not be issued license plates by the public security and traffic departments.

All small motor vehicles purchased in violation of the regulations in this report will be confiscated by the finance department, and those responsible will be dealt with severely.

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KNITWEAR PRODUCED IN AIR RAID SHELTER FACTORY

Beijing GUANGMING RIBAO in Chinese 12 May 81 p 2

[Article by reporters Zhou Wenbin [0719 2429 2430] and Song Guangming [1345 0342 2494]: "Air Raid Shelter Factories--Visit to the Second Sweater Factory at Xibeijiao, Tianjin City"]

[Text] Walking down several dozen flights of stairs, we enter a brightly lit air raid shelter. After making several turns, the sound of machines is heard. Walking further, the sight of 20 transverse type knitting machines emerges. Several dozen young workers and several old teachers are working at their respective posts attentively. Some are rocking the saddle of the knitting machine, some are reversing thread. Their movements are skillful and orderly. If you did not know, you would have thought this was an old factory with a long history.

This is the Second Sweater Factory at the northwest corner of Nankai Ward in Tianjin City. As to its history, it has been in existence only for a year and 5 months.

After the Third Plenum of the Party, old master Zhou Zhongtian [0719 1813 3944] of the Tianjin Wool Clothing Factory kept pondering an idea: I am about to retire, but how can I continue to contribute towards the building of the four modernizations? Master Zhou sought out another old master Hou Shicheng [0186 0013 5256] who had already retired and they talked: If we organize the unemployed youths on the streets and open a sweater factory, the problem of unemployment can be solved and wealth can be created for the state. Is this not a perfect idea! Both of them thought of the same thing. They went together to see the responsible person of the second residents committee of Xibeijiao Street and told him of their idea. The residence committee actively supported the idea and converted an abandoned restroom 2 meters wide and 6 meters long into their only "factory." The streets also loaned them 2,100 yuan as capital for building the plant. Thus, they used 1,400 yuan and bought 14 used machines. The Tianjin City Textile Industry Research Institute gave massive support and provided them with raw materials. The sweater factory officially went into operation on 20 November 1979. Zhou Zhongtian became manager of the factory.

During the first month after the factory started operation, they earned 4,200 yuan, paid off all debts, and had over 2,000 yuan remaining. During the second half of last year, the equipment and facilities in the factory were completely renovated.

Twenty knitting machines were purchased but there was no place to install them so they moved into this air raid shelter.

"Now, how many people does your factory have altogether?" We asked factory manager Zhou.

"The factory has 150 people, besides 31 teachers, the rest are all unemployed youth. In addition, our factory also contracts work out to over 300 unemployed people. In a sense, we have given them jobs too. Thus, there are nearly 500 people." Factory manager Zhou smiled and said, "but, when the factory first began, we did not have this many people. At that time, there were only four teachers and some 30 young people. The teachers had to teach ideological work to the youths and had to lead them by the hand to teach them the skill. Sometimes the teachers had to work from 0600 am until midnight. Take me for example. I am a jack of all trades. I have to follow the students around, reverse threads, repair the machines, and also take care of supply and marketing and the books. This high spirit of the teachers moved the young people in the factory, and they have said to us: do not worry, we will do the work well."

As we emerged from the air raid shelter, we came to the wool extraction shop, the "factory" of 12 square meters converted from the abandoned restroom where everything began. A young fellow turned a switch on and a refined synthetic fiber scarf was sent to the down pulling machine. After several minutes, an even layer of fine down emerged from the scarf. Factory manager Zhou said by way of introduction: "When the factory first began, we did not have such a down pulling machine, we had to go to the south to buy a kind of thorny plant--lamaoguo--to pull out the down. But the efficiency of this kind of lamaoguo is low, the quality cannot be assured, and the cost was high. Over 10,000 yuan worth of lamaoguo were spent a year. Later, we went to some large factories and bought a lot of remnant cloth at 50 fen per jin, and we built nine down pulling machines on our own. Each year, the cost of pulling down is only 300 to 400 yuan. Do not think that this is a silly looking machine. Some large factories in Tianjin have even come to inspect and learn about these machines."

After leaving the wool pulling shop, we walked through several winding tunnels and arrived at a room shaped like a carpenter's square. Knitted wear is processed here. The big iron pot is the equipment used to set the size of the knitted wear. Several sewing machines complete the final touch up of the knitted wear. Dresses, pants, scarfs, children's clothes of various styles and colors glitter as they cover the work bench. Boxes of finished clothes ready for shipment are placed on one side of the room neatly.

"Where are these finished products going?" We asked.

Factory manager Zhou told us without refrain: "They will be shipped to Beijing. The day before yesterday, we just shipped 100 cartons to Beijing. Each month, we ship 400 to 500 cartons of finished products to the Beijing commodities, knitwear and cotton wear wholesale department and the Beijing commodities supply station. They have even given us a purchase order: We will take as much as you produce."

The statement by the plant manager confound us, so we asked: "How can your products create such interest?"

Plant manger Zhou said proudly: "The fragrance of the flower will naturally attract the honey bee. In the past, they did not order from small street side plants like ours, but later, they discovered that the quality of our plant's products was good, so they did not go to the large factories to fill their orders anymore, and they specifically wanted our products. The purchasers said: "Your words are worth more than contracts, we believe in your products." Thus, we concluded a contract-less contract with them."

Here, we also met an old teacher named Zhou Xiufang [0719 4423 5364]. She used to be a sample designer for the wool clothing factory. After retiring, she came to this street side factory. She carried on her old profession and designed several bright colored and beautifully styled children's clothes, prepared for presentation to the foreign trade department to seek orders. A golden phoenix has emerged from the air raid shelter!

"What is the income of your plant?" We presented a new question.

It could be seen that this question made the factory manager very happy. He gave us a series of figures: "Last year alone, we created over 610,000 yuan in productive value, after all expenses, the net profit was over 163,000 yuan. Last year, we spent 10,000 yuan to renovate equipment, this year we also spent 20,000 yuan to buy a piece of land, and we are prepared to build a new factory building. Now, the average wage of the workers of the factory is 60 to 70 yuan, the highest wage is over 100 yuan. Some young people have been officially given a job in some large factories but they refuse to go and they want to stay in this factory."

Indeed, who wants to leave such a good factory!

Workers of the Second Sweater Factory at the northwest corner of the Nankai Ward in Tianjin City work in the air raid shelter.
Photo by Chen Xizhen [7115 6932 3791]

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